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FARMING FOR THE FUTURE

PROGRESS REPORT

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Heritage Fund

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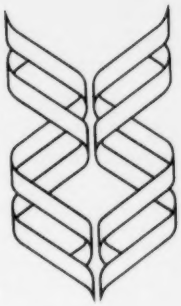
Farming For The Future Progress Report 1987



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Heritage Fund

Chairman's Report

As Chairman of the Agricultural Research Council of Alberta, I am pleased to present the eighth annual Progress Report of the Farming for the Future agricultural research program for the operating year April 1, 1986 to March 31, 1987.

With the end of the operating year, Farming for the Future's second mandate was completed, and all projects funded during this three-year mandate were concluded.

Of course, Farming for the Future is continuing. In November 1986, I was extremely pleased to announce a new five-year mandate for the program which ensures its operation through to March 31, 1992. Under the terms of its third mandate, Farming for the Future receives an annual allocation of $5 million from the Alberta Heritage Savings Trust Fund. This commitment raises total Heritage Fund support for this agricultural research effort to $65 million over the period 1978 to 1992.

In 1986-87, Farming for the Future again supported a wide range of projects through its two major funding programs, the Research Program and the On-Farm Demonstration Program. Last year, 37 new and 58 renewed research projects received awards totalling more than $4.57 million while 133 on-farm demonstration projects were conducted at a cost of nearly $459,000. Including 1986-87 figures, Farming for the Future awarded $13.7 million to 176 research projects and supported 277 on-farm demonstration projects at a cost of $1.13 million during the three-year second mandate (1984-87).

During more than eight full years of operation, Farming for the Future has acquired quite a record of accomplishment, one in which all Albertans can take great pride. Over those years, the program has awarded a total of $35.86 million to the 375 projects conducted under its Research Program. In addition, 384 projects have received almost $1.58 million under the On-Farm Demonstration Program, which commenced in 1982. As well, $235,974 was spent on 37 projects under the Graduate Student Research Support Program which operated during 1982-83 and 1983-84.

Over the life of Farming for the Future, more than 300 scientists and more than 300 producers have been involved in the 796 projects conducted to date. These projects have covered all major commodities and resource areas of importance to Alberta's agricultural and food sector.

But, in research, as in so many other endeavors, results are what count. Overall, Farming for the Future projects have yielded many successes which are providing our agricultural sector with a number of valuable advances. Among the more notable accomplishments are development of:

- improved wheat, canola and barley varieties for Alberta conditions.
- livestock vaccines against three types of calf scours and, with further development, a single vaccine which combines the three earlier vaccines.
- new safflower and soybean varieties for Alberta conditions.

- a processing technique for improving the quality of beef.
- methods to control and reduce soil salinity.
- rapid techniques for evaluating livestock feeds.
- improved methods for controlling potato diseases.
- improved nitrogen application techniques.
- up-to-date information about removing pesticides from contaminated clothing.
- new methods for improving the efficiency of irrigation systems.
- improved management recommendations for growing various cereal and oilseed varieties.
- a new technique for improved detection of pneumonia in swine.
- a new technique to split calf embryos to produce identical twins.
- a more effective and easy to manufacture vaccine against hemorrhagic enteritis in turkeys.
- new potato cultivars suited to Alberta conditions.

Each of these advances is an important achievement in itself. Taken together, they vividly demonstrate how much progress can be made in agriculture by undertaking appropriate research. We expect a similar level of achievement from Farming for the Future's third mandate. For 1987-88, the first year of the new mandate, 86 new research projects have been awarded funding worth more than $3.81 million. As well, on-farm demonstration projects will continue to be approved as required throughout the year.

This year also marks the start-up of the Alberta Agricultural Research Institute. The Institute, being established as a Crown corporation, is designed to recommend agricultural research policies, provide research co-ordination, support long-term research and facilitate joint research between industry, government and academic agencies. Farming for the Future will be working closely with the Institute to ensure co-ordination of short-term and long-term research.

During 1986-87, there were a number of changes in the membership of the Agricultural Research Council of Alberta, the body which administers Farming for the Future. Mr. Nigel Pengelly, MLA for Penhold and the Legislative Assembly's representative on the Council since 1983, completed his term. Mr. Pengelly's timely advice will be missed and I know all members of the Council join me in wishing him well.

Also completing their terms last year were Mr. Jack Newman and Mr. Elden Kaun, producer members from Fort Vermilion and Penhold, respectively. On behalf of the Council, I would like to thank both of these members for the valuable contributions they have made to Farming for the Future, and wish them well in all future endeavors.

During the year, changes occurred in Alberta Agriculture's representation on the Council. Dr. Art Olson departed, accepting the post of Assistant Deputy Minister responsible for Agriculture Canada's Research Branch. Dr. Olson was the Council's first secretary and later served as the Council member representing Alberta Agriculture. On behalf of the Council, I wish to thank him for his major contributions to the cause of agricultural research in Alberta.

Dr. Jim Mahone also departed the Council and is now with the University of Guelph. Dr. Mahone was Council secretary in 1985 and 1986, and was involved with the Council and Farming for the Future since 1982 as Director of Alberta Agriculture's Research Division. We wish him well in his new post.

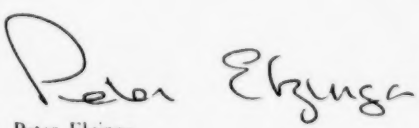
Due to these departures we have a number of new Council members. These include Mr. Jack Ady, who takes over for Mr. Pengelly as the representative of the Alberta Legislature. Mr. Ady is the MLA for Cardston, and will be a valuable addition to the Council.

I also wish to welcome to the Council Mr. Don Cox, Mr. Dennis Fraser and Mr. Keith Porter, producer members from Fairview, Cherry Point and Duffield, respectively. I know the Council looks forward to working with these new members, and that it will benefit substantially from their experience and expertise.

Replacing Dr. Olson as Alberta Agriculture's representative is Dr. Ralph Christian, the new Executive Director of the Department's Research Division. Replacing Dr. Mahone as Council secretary is Dr. Yilma Teklemariam, also of the Research Division.

Finally, on behalf of the Council, I would like to acknowledge and express great appreciation for the efforts of the many scientists, producers, committee members and administrative staff who were key to making 1986-87 another successful year for Farming for the Future. Because of their efforts, Farming for the Future has made substantial progress in developing and communicating the new agricultural knowledge and technology which allow Alberta producers and processors to remain at the forefront of agricultural innovation.

In addition to producers and processors, consumers also reap the benefits of agricultural research, directly through new and improved food products and indirectly through the contributions new agricultural technology makes to Alberta's economy. All of these reasons assure me that the Heritage Fund dollars spent on agricultural research are, without doubt, being devoted to the maintenance and expansion of our important agricultural sector, and therefore, to the long-term interest of all Albertans.



Peter Elzinga
Minister of Agriculture
Chairman, Agricultural Research Council of Alberta
August 1987

1987 Progress Report

Introduction

To ensure profitability, Alberta's agricultural and food industry must use progressive technologies and meet changing market demands. This requires research designed to answer the industry's specific needs. Aware of the value of agricultural research, the Government of Alberta announced the creation of Farming for the Future in 1977.

This Alberta Heritage Savings Trust Fund program is a vehicle for support of research and technology transfer to increase net farm income and promote the lasting viability of the agricultural sector. Since project funding began in 1978, Farming for the Future has completed two mandates. Its second mandate had a three-year term ending on March 31, 1987.

Farming for the Future has two funding mechanisms, the Research Program initiated in 1978, and the On-Farm Demonstration Program started in 1982. Research Program dollars are awarded to basic and applied research projects which will benefit the industry. In the On-Farm Demonstration Program, the emphasis is on demonstrating new technology under actual farm conditions.

Both research and demonstration projects have covered a broad spectrum of needs in Alberta's agricultural and food industry, from problems in production of crops and livestock, to processing and marketing concerns.

After a review of Farming for the Future's achievements during its first two mandates, the program's third mandate was announced on November 4, 1986. This mandate will have a five-year term from April 1, 1987 to March 31, 1992, and an annual allocation of $5 million, subject to approval by the Alberta Legislature.

Administration

The Agricultural Research Council of Alberta is Farming for the Future's administrative body. The 15-member Council is comprised of producers, and representatives of governmental and academic agencies, and is chaired by the Minister of Agriculture.

As Farming for the Future's governing body, the Council approves expenditures under the program and determines research policies and strategies. In 1986-87, it awarded over $4.57 million to research projects and almost $459,000 to demonstration projects.

The Council also allocates a portion of Farming for the Future funds to program administration. Alberta Agriculture's Research Division serves as the operational arm of the Council. The Division administers projects, and disseminates information on project results and on Farming for the Future. In 1986-87, the Division published: the *Proceedings of the Farming for the Future Research Conference*, held in March 1986; the *1986 Farming for the Future Progress Report;* two bulletins distributed as magazine inserts; and a magazine, *Research Report*, which informs producers about the results of research and demonstration projects.

Research Program

Introduction

The Agricultural Research Council of Alberta has established nine Program Committees to review research proposals and provide recommendations to assist the Council in making funding decisions. The nine Committees are: Cereals and Oilseeds; Crop Protection and Entomology; Forages; Irrigation; Land Resources and Engineering; Non-Ruminant Livestock; Processing, Transportation, Marketing and Socio-Economics; Ruminant Livestock; and Special Crops. Each Committee includes representatives of research agencies and the agricultural industry with expertise in its program area.

The Council and Committee members assess the design and cost of each proposal and its potential benefit for Alberta's agricultural industry. In 1986-87, the Council awarded $4.57 million to 37 new and 58 renewed research projects. During the entire second mandate (1984-85 to 1986-87), 176 research projects were supported with $13.74 million. For 1987-88, the first year of Farming for the Future's third mandate, the Council has granted 86 new projects $3.81 million.

Some of the research projects carried out during the program's second mandate are highlighted below. A complete list of research projects funded during the second mandate and a list of those awarded support for 1987-88 appear later in this report.

Crop Research

Grains and Oilseeds

Wheat, canola, barley, oats, flaxseed and rye are Alberta's major grains and oilseeds. In 1986, these crops yielded over 18 million tonnes with farm cash receipts totalling $1,335 million.

The Agricultural Research Council recognizes the importance of grain and oilseed production to Alberta's agricultural industry. During Farming for the Future's second mandate, it funded 10 grain and oilseed research projects with more than $2 million. For 1987-88, five such projects have been awarded $507,100.

Grain and oilseed research projects during the program's second mandate included breeding canola varieties for Alberta conditions, assessing management systems for barley and wheat, breeding soft white spring wheats, and evaluating semi-dwarf barley.

Many of these projects involved crop breeding, a lengthy process which can take more than 10 years for varieties to be selected, tested, registered and released for general use. One breeding project involved developing locally adapted varieties of soft white spring wheat, a crop with good yield potential and promising marketing opportunities. The project was initiated during Farming for the Future's first mandate and continued in its second mandate. This sustained effort has generated valuable breeding material now in various stages along the way to registration. For example, a stripe rust resistant cultivar has been granted interim registration, and 15 improved lines have been entered into trials for possible registration.

Test plots of soft white spring wheat help scientists identify better breeding material for Alberta conditions.

Forages

In 1986, forage production in Alberta had an estimated on-farm cash equivalent of $674 million. Of this total, tame hay, cereal silage, and greenfeed accounted for $541 million; forage production from pasture was worth an additional $133 million.

Throughout Farming for the Future's second mandate, 15 forage projects were awarded $918,767. A wide range of research was conducted including studies on forage management practices, nitrogen-fixing inoculants, grazing systems, and testing of pasture species. For 1987-88, the Agricultural Research Council has granted eight forage research projects a total of $316,000.

Forage research can yield information to help solve production problems. For instance, one study generated practical recommendations for southern Alberta growers. The researcher tested forage varieties and assessed management practices to find ways to create high yielding, good quality pastures from early spring to early winter. He compared annual and perennial forages, and developed agronomic recommendations on such factors as seeding dates, fertilizer applications and double cropping.

Alternative Crops

Alternative crops, sometimes called special crops, have been gaining in importance as markets for traditional crops have become more competitive. Farm cash receipts from such crops as sugar beets, potatoes, vegetables, and nursery stock have increased from about $78 million in 1978 to $139 million in 1986.

The Agricultural Research Council funds research to provide more and better crop alternatives, and to improve the productivity of these crops. During Farming for the Future's second mandate, 12 projects were funded at a total cost of $915,719. Six projects have been awarded funds totalling $329,222 for the first year of the program's third mandate.

Examples of second mandate projects on alternative crops include development of soybean and safflower varieties for Alberta conditions, production of ornamental flowers, new techniques for detecting diseases in potatoes, and testing of pulse cultivars for adaptability to central Alberta.

Production of potatoes, one of Alberta's most important alternative crops, generated farm cash receipts of $30 million in 1986. Between 1984 and 1987, the Council funded four projects on potatoes under the Research Program. One of these projects resulted in the development of a test for detection of bacterial ring rot and leaf roll virus in potatoes. The procedure makes use of sensitive testing agents called monoclonal antibodies. With this sophisticated analytical technique, Alberta growers can ensure that seed potatoes remain disease-free, helping them to improve their competitive position on export markets.

Researchers studied double cropping for dual purpose fields. Both hay and late summer pasture can come from the same field by using proper crop mixtures.

Another potato project has resulted in a better system of breeding potatoes. By using tissue culture and sensitive testing procedures, researchers were able to eliminate disease causing agents (pathogens) from the breeding material. This same project also tested cultivars and found a number that were suitable to Alberta conditions. For example, an early maturing french fry cultivar, Shepody, was introduced through the program. The researcher estimates that the introduction of Shepody has boosted the annual farm gate value of the Alberta potato crop by about $1.2 million, extended the processing season up to three weeks, and opened up additional seed markets.

New varieties of alternative crops, like the fababeans shown here, are being tested to find improved strains and develop better ways of growing them.

Soil and Water

Land and water resources are the foundation of Alberta's agricultural industry. Proper management of these resources is necessary to maintain and increase agricultural productivity. Twenty-eight soil and water projects were conducted between 1984-85 and 1986-87 under the Research Program with funding of $2,749,809. In 1987-88, 13 projects will be supported with $657,645.

Research funded in this area has involved such diverse topics as measures to control soil salinity, guidelines for irrigation techniques, methods for improving fertilizer effectiveness, comparison of tillage practices, and the impact of soil erosion.

Saline deposits can spell crop disaster because plants cannot thrive on salty water. These deposits are expanding by about 10% each year in some parts of Alberta, creating a serious and growing problem. Saline deposits appear when excess water evaporates and leaves behind the naturally occurring salts it has picked up. One research project studied two ways to remove the excess water: high moisture-use crops and tile drainage. Some crops – like alfalfa – require a great deal of moisture and so reduce the water table. Shallow tile drainage takes away excess water before it evaporates. Findings to date indicate that salt damage can be reduced and soils reclaimed using a combination of these two techniques.

Another research project studied an innovative technique for the application of fertilizers with irrigation water. This method, called fertigation, is expensive but is increasing in popularity. Researchers wanted to determine if the technique resulted in greater fertilizer efficiency and better yields for soft white wheat. Generally, they found that the results did not always justify the extra expense, and recommended producers use fertigation only under certain circumstances.

Crop Protection and Entomology

An important part of successful crop production is the control of crop diseases, weeds and harmful insects. The Agricultural Research Council supports research into pest control and into more effective use of helpful insects.

During the second mandate, 14 research projects were conducted with $837,447. These projects dealt with such subjects as root rot in barley, root maggots in canola, black point in soft white wheat, weed control for alfalfa, and biological and chemical control of grasshoppers. In 1987-88, eight projects will be funded with $298,335.

The development of an improved method of pest control often starts with a better and more detailed understanding of the pest's characteristics. For instance, one project involved the control of the European corn borer. By studying the life cycle of this insect, the researcher determined that a combination of chemical and cultural methods provided effective control of the corn borer. As a result, a set of guidelines have been compiled to help farmers decide on the best control methods for their situation.

Livestock Research

Beef Cattle and Sheep

In 1986, cash receipts from livestock and livestock products accounted for about half of Alberta's farm cash receipts and totalled $1,931 million. Almost 65% of these receipts were from cattle and sheep production.

In keeping with the importance of the cattle and sheep sector, the Council funded 41 research projects on beef cattle and sheep during 1984-87 with $2,911,136. For 1987-88, 19 projects have been awarded a total of $766,000 under the Research Program.

Second mandate projects included fertility testing of beef bulls, coccidiosis in cattle, feedlot performance of beef, bovine respiratory disease, a vaccine for calf scours, lamb carcass grading and cloning to produce identical calves.

Many of these projects dealt with ways to make production more cost efficient through improved management and disease control techniques. For example, one project tested a vaccine against calf scours. Calf scours, or neonatal diarrhea, is a common disease in young calves and can cost individual producers thousands of dollars in losses annually. Scours can be caused by several pathogens so control of the disease is sometimes difficult. Through first mandate Farming for the Future research support, three vaccines were developed against three types of scours. A second mandate project combined these separate vaccines into a single vaccine for easier disease control. Testing of this trivalent vaccine revealed that it could be beneficial in herds where proper management practices are used.

Another example of cost saving results comes from a project investigating the influence of temperature on protein digestion. The researcher discovered that mature cattle and sheep need their energy intake supplemented in cold weather but not their protein intake. Since the protein part of the ration is often the most expensive, this finding could save producers unnecessary expense.

The hormone being injected into this dairy cow can increase her milk production by 15 to 20%.

Dairy Cattle

In 1986, Alberta farm cash receipts from milk and cream were more than $243 million. But the high cost of inputs for dairy production can eat into profits. One way for dairy producers to improve profits is to make their operations more efficient. Results from a research project on bovine somatotropin (BST) could help to improve their efficiency. BST is a protein hormone produced in the laboratory which is identical to the growth hormone found in the cow's pituitary gland. BST increases milk production by 15 to 20%, allowing dairy farmers to handle fewer animals while producing the same quantity of milk. The effects of BST on cow health and reproduction are currently under investigation.

Other second mandate dairy production projects have focused on protein and energy utilization by dairy cows and calves, and delayed breeding of dairy cows. In total, six dairy research projects were funded from 1984-87 with $469,000. For 1987-88, funds totalling $137,000 have been awarded to two projects. In addition, many of the research projects involving beef cattle are also applicable to dairy cattle.

Swine

Farm cash receipts for 1986 from Alberta's swine industry totalled $277 million or about 14% of farm cash receipts from all livestock and livestock products. The Agricultural Research Council recognizes the value of research in helping hog producers improve production efficiency.

During Farming for the Future's second mandate, it awarded $619,983 to 10 swine research projects. In 1987-88, five projects will be conducted with $161,672 from the Research Program. Second mandate research studies included work on swine nutrition, reproductive performance of sows, and a diagnostic test for porcine pneumonia.

Swine diseases decrease production efficiency. For instance, porcine pneumonia – while not often fatal – causes swine to grow more slowly. However, swine can be affected by the disease without showing obvious symptoms. A project undertaken to improve detection of the disease has met with some success. The researcher perfected a method to rapidly detect porcine pneumonia with a gene probe. Accurate disease detection could be the first step in creating swine herds free of pneumonia.

Poultry and Eggs

Poultry and egg production in Alberta generated farm cash receipts of $132 million in 1986. Research is a necessary part of maintaining and improving this industry. Between 1984 and 1987, the Council supported five projects with $413,877. For the first year of the third mandate, three projects have been allocated $103,709.

During its second mandate, Farming for the Future's research efforts focused on effects of fever and infection on muscle tissue growth, development of a vaccine against hemorrhagic enteritis, canola seed as feed for hens, and sudden death syndrome in chickens.

Fifty percent of all deaths in meat chickens can be attributed to sudden death syndrome (SDS). The cause of SDS is unknown but one Farming for the Future project increased scientific understanding of the disease. The researchers observed chicken behavior before

death, and analyzed the blood chemistry and tissues of SDS chickens and normal chickens. The SDS chickens showed no unusual behavior patterns prior to death. However, some abnormalities appeared in their blood chemistry, and in the fatty acid composition of their heart and liver tissues. These abnormalities could cause cardiac arrest and so may be linked to SDS. The project's findings could play an important part in future research on the cause and control of SDS.

Other Livestock

In the second mandate, the Council funded three research projects on other types of livestock with $168,024. One project studied nutrition in horses while the other two concerned management of wapiti (commonly known as elk).

Although these animals are not major components of Alberta's livestock industry, a small investment in alternative livestock research can sometimes yield high returns. For instance, results from the project on horse nutrition could prevent possible losses of over $1 million annually to Western Canada's horse industry. Breeders sometimes allow their horses to overfeed since heavier animals often have more success at horse shows. However, this research showed that free feeding horses were at a definite disadvantage compared with horses fed a strict ration. The free feeding group suffered a higher than normal incidence of bone and cartilage disease from the stress of extra weight and faster growth. Potentially, horse breeders could reduce economic losses from skeletal deformities by employing proper rationing.

Overfeeding healthy foals with calorie-rich diets can cause crippling bone deformities as they grow to maturity.

Processing, Marketing and Socio-Economics Research

Processing

Efficient processing of primary products into higher value goods is important in all commodity areas. Farming for the Future research projects in this category have included such topics as evaluation of canola oil, development of a process for freezing and drying fruits and vegetables, and creation of a method to minimize browning in potato products.

One study examined the effects of electrical stimulation on the quality of beef. It was discovered that high voltage electrical stimulation of very lean meat from mature carcasses may reduce toughness and facilitate early processing. This could allow more meat from older animals to be processed and sold successfully.

From 1984-87, 12 processing projects were granted $933,571, and in 1987-88, six projects will be conducted with $225,000.

Marketing

Marketing research is crucial to the agricultural industry. To ensure that Alberta's agricultural products can successfully compete in the national and international marketplace, it is vital to investigate such factors as market demand characteristics and ways to expand existing market shares and penetrate new markets.

The Research Program funded six marketing projects with a total of $191,980 from 1984-87 and will be supporting two projects with $60,000 in 1987-88. The program's marketing research has covered such areas as trade barriers in the canola crushing industry, markets for beans, hedging programs for Alberta beef producers, and export markets for wheat.

The project on wheat export markets generated some noteworthy conclusions. The researchers estimated the value of wheat characteristics — such as protein and color — in world markets. They predicted that demand for intermediate quality wheats by middle and lower income countries will increase. They suggested that more emphasis be placed on developing intermediate quality wheats which are high yielding, so Canada can increase its share of the markets of middle income nations.

Socio-Economics

Farming is both a way of life and a business operation. Understanding the interaction between social and economic factors is important to the continued success of the family farm. Socio-economics research under Farming for the Future has explored such topics as the farm production unit, the beef price cycle, farm family consumption, the structure of the prairie grains sector, Alberta farmland values, and retirement and farm transfer.

A total of 14 socio-economic projects received $607,296 during Farming for the Future's second mandate. In 1987-88, there will be nine such projects awarded $249,500.

One second mandate study showed that effective retirement and farm transfer planning is necessary to maintain the successful operation of Alberta farms. However, the researchers found that most farmers do little such planning. To help farm families with effective retirement planning, the researchers developed a number of practical recommendations.

On-Farm Demonstration Program

Farming for the Future's On-Farm Demonstration Program combines information dissemination and testing of agricultural technology. Under this program, farmers, Alberta Agriculture staff and other specialists work together to demonstrate new agricultural practices to farmers.

This program makes use of the natural lines of communication that already exist between farmers. Through on-farm demonstrations of livestock management techniques, crop varieties, soil management practices, and other innovative agricultural technologies, these projects educate and inform those directly involved as well as the local farming community.

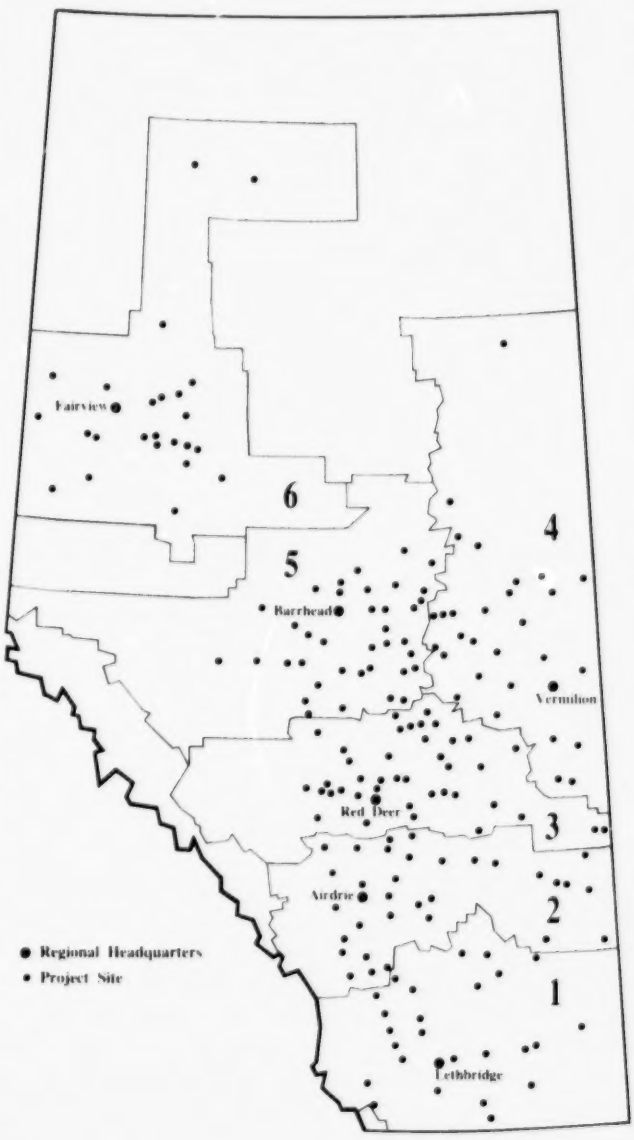
The On-Farm Demonstration Program went into operation in 1982. It has proven to be popular and effective. Projects have been conducted all over Alberta and have directly involved hundreds of Alberta producers. In 1986-87, 133 projects (106 new and 27 renewed) were awarded almost $459,000 and a total of 277 projects were awarded a total of $1.13 million during the program's second mandate.

Proposals for demonstrations can be submitted at any time throughout the year. They are assessed by one of the six Regional Review Committees which are composed of producers and Alberta Agriculture staff. The Committees evaluate each proposal on the basis of its relevance to the region's agricultural sector, the experience of the applicants, and the size, duration and cost of the project. The proposal and Committee recommendations are submitted to the Agricultural Research Council for final approval.

Many informative projects have been conducted under the On-Farm Demonstration Program. Project topics have included: testing of Polypay sheep in intensive production and comparing its breeding ability with local breeds and crosses; transplanting sugar beets from greenhouse to field to reduce spring losses; corn silage production for dairy cows as compared with traditional silages; comparison of sow performance under computerized feeding and stall feeding; management strategies for rotationally and intensively grazed pastures; and increasing soil productivity by improving fertility, structure and tilth.

A list of on-farm demonstration projects funded during Farming for the Future's second mandate appears later in this report.

Location of On-Farm Demonstration Projects



Future Directions

On November 4, 1986, the Honourable Peter Elzinga, Minister of Agriculture, announced that Farming for the Future would receive a third mandate. The program will have a five-year term to March 31, 1992 and an allocation of $5 million per year, subject to annual approval by the Alberta Legislature.

The renewal was based on Farming for the Future's impressive record of accomplishment during its first two mandates. The continued commitment from the Alberta Heritage Savings Trust Fund is a sound investment. Farming for the Future's objective of supporting research and technology transfer to enhance profitability in Alberta's agricultural industry is even more vital today than when the program was first announced in 1977. The results obtained from this research and demonstration program benefit all Albertans.

Farming for the Future is designed primarily as a support mechanism for short-term agricultural research to meet the immediate needs of the industry. In 1986-87, the Alberta Government began working towards the establishment of a new mechanism to complement Farming for the Future: the Alberta Agricultural Research Institute. The Institute will recommend priorities, co-ordinate research activities and support longer term research programs, emphasizing multidisciplinary studies and private sector participation.

The administrators of Farming for the Future will work closely with the Institute's Board of Directors to guide Alberta's agricultural research effort towards top priority areas. Through effective co-ordination and policy recommendations, these two bodies will ensure that maximum use is made of available research dollars.

The goal of both Farming for the Future and the Alberta Agricultural Research Institute is to support world class, high priority research. Their combined efforts will provide a solid foundation for progress in Alberta's agricultural and food industry.

Research is the seed which gives rise to progress, and the communication of research results is water for the seed.

Research Program Projects *Second Mandate*

Project Title	Project Manager	Institution and Location	Funding Awarded 1984-87
Cereals and Oilseeds			
Development of Management Practices to Improve Cereal and Oilseed Productivity in the Peace River Region	R.I. Wolfe	Agriculture Canada — Beaverlodge	248,680
Effects of Low Temperatures and Diurnal Fluctuations on the Germination and Emergence of Canola	P.F. Mills	Agriculture Canada — Beaverlodge	92,406
Acceleration of Canola Variety Development for the Peace River and Southern Alberta Regions	R.K. Downey	Agriculture Canada — Saskatoon, Beaverlodge, Lethbridge	1,125,000
Physiological Screening for Cold Hardiness in Winter Wheat and Triticale Germplasm	F.M. Mederick	Alberta Agriculture — Lacombe, and Alberta Research Council — Edmonton	84,585
Identification of Low Temperature Tolerant and Early Flowering Canola Genotypes	Z.P. Kondra	University of Alberta — Edmonton	24,400
Breeding Soft White Spring Wheats for Western Canada	R.S. Sadasivaiah	Agriculture Canada — Lethbridge	210,800
Screening Winter Wheat for Resistance to Snow Mold Pathogens Under Controlled Conditions	D.A. Gaudet	Agriculture Canada — Lethbridge	91,236
Genetic Studies on Yield-Protein Relationships in Common Wheats	S. Kibite	Agriculture Canada — Lacombe	32,417
Studies of Extreme Strong Straw Strength in Semi-Dwarf Six-Row Barley	K.G. Briggs	University of Alberta — Edmonton	55,360
Intensive Management Systems for Barley and Wheat Production	D.C. Penney	Alberta Agriculture — Edmonton and Lacombe	37,200
Crop Protection and Entomology			
Potassium Chloride as a Means of Reducing Root Rot in Barley	J.T. Harapiak	Western Co-operative Fertilizers Ltd. — Calgary	36,620
Feasibility Study for Control of Root Maggots (*Delia* spp.) on Canola: Supplement	G.E. Ball	University of Alberta — Edmonton	58,657
Seedling Blight of Canola in Alberta	J.P. Tewari	University of Alberta — Edmonton	145,140
Long-Term Study of the Influence of Environmental Variables on Herbicide Efficacy	W.H. Vanden Born	University of Alberta — Edmonton	58,500
Life History and Phenology of the European Corn Borer in Southern Alberta	J.R. Spence	University of Alberta — Edmonton	23,334
Identification of Irrigation Practices that Reduce Black Point in Soft White Wheat	R.L. Conner	Agriculture Canada — Lethbridge	45,695
Weed Control in Alfalfa for Seed Production	J.R. Moyer	Agriculture Canada — Lethbridge	69,208
Use of Ethylene for Control of Germination of Dormant Weed Seeds in Alberta Soils	M.E. Spencer	University of Alberta — Edmonton	130,836
Effects of Chlorsulfuron and DPX-T6376 on Succeeding Rotational Crops	R. Esau	Alberta Agriculture — Brooks	13,230
Effect of Copper on Stem Melanosis of Park and Other Wheat Cultivars	L.J. Piening	Agriculture Canada — Lacombe	64,271
Analysis of Bee Repellent Residues in Honey	P. Sporns	University of Alberta — Edmonton	37,250
Evaluation of Grasshopper Control with *Nosema locustae* and Insecticides on Bran Carrier	D.L. Johnson	Agriculture Canada — Lethbridge, and United States Dept. of Agriculture, Bozeman	123,634
Billion Drop Technology: Perennial Weed Control Studies	R.B. Rogers	Rogers Engineering Inc. — Saskatoon	20,272
Chalkbrood Control in Leafcutter Bees	E. Simpson	Alberta Alfalfa Seed Producers Association — Tilley, and Alberta Agriculture — Brooks	10,800

Project Title	Project Manager	Institution and Location	Funding Awarded 1984-87
Forages			
Management Systems for Grass-Legume Forage Crops in the Peace River Region	N.A. Fairey	Agriculture Canada — Beaverlodge	119,510
Soil Implant Inoculants for Alfalfa	W.A. Rice	Agriculture Canada — Beaverlodge	149,750
Maximization of *In vitro* Alfalfa Embryo Production and Development of Artificial Alfalfa Seed Systems	T.H.H. Chen	Alberta Research Council — Edmonton	43,800
Improvement of Distribution of Digestible Dry Matter in Smooth Meadow Bromegrass under Pasture Production	V.S. Baron	Agriculture Canada — Lacombe	76,835
Effects of Storage and Processing on Vitamin E Levels in Forages	P.J. Martin	Norwest Feed Research Ltd. and Westra-Danen Associates Inc. — Edmonton	25,000
Annual Forage Crops (Southern Alberta)	R.G. Gaudiel	Alberta Agriculture — Brooks	128,500
Control of Field-Drying Hay	L.P. Milligan	University of Alberta — Edmonton	30,000
Effect of Grazing on Forage and Beef Production from Rough Fescue Rangeland in Central Alberta	A.W. Bailey	University of Alberta — Edmonton	94,000
Germination and Establishment of Pasture Grass Species	J.R. King	University of Alberta — Edmonton	58,350
Assessment of the Role of Abscisic Acid in Alfalfa Fall Dormancy and Regrowth After Cutting	S.C. Chen	Alberta Research Council — Edmonton	26,000
Increasing Alfalfa Production During the Establishment Year	J.S. McKenzie	Agriculture Canada — Beaverlodge	52,332
Methods of Harvesting and Utilizing Mixed Maturity Barley	B.E. Thorlakson	Thorlakson Feedyards Ltd. — Airdrie	30,000
Effect of the Savory Grazing Method on Plant Succession in Albertan Native Range	J.R. King	University of Alberta — Edmonton	17,590
Development of Recombinant DNA Techniques for Gene Transfer into Alfalfa	R. Irving	Alberta Research Council — Edmonton	35,100
Production of *Rhizobium meliloti* Inoculants for Alfalfa by Process-Controlled Fermentation	W.T. Leps	Alberta Research Council — Edmonton	32,000
Irrigation			
Subsurface Drainage Depth and Spacing Criteria for Medium to Fine Textured Soils Within Irrigated Alberta	D.B. Harker	Alberta Agriculture and Agriculture Canada — Lethbridge	57,120
Evaluation of Low Volume Wind Turbines for Pumping Water	B.A. Paterson	Alberta Agriculture — Lethbridge	30,000
Adaptation of Downstream Control to a Vertically Hinged Automatic Check Structure	K.R. Craig	Underwood McLellan Ltd. — Lethbridge	63,500
Development of Agricultural Subsurface Drainage Design Standards for Alberta	H.S.A. Vander Pluym	Alberta Agriculture — Lethbridge	58,700
Evaluation of Effectiveness of PVC Cutoff Curtains for Seepage Control Adjacent to Irrigation Canals	D.J. Convery	Hardy Associates (1978) Ltd. — Calgary	87,600
Downstream Automatic Control of a Series of Checks on an Irrigation Lateral	T.G. Ayers	UMA Engineering Ltd. and Alberta Agriculture — Lethbridge	173,655
Economic Impacts of Alternative Locations for Adding Acres to the Irrigation Districts' Rolls	B.C. Palmer	UMA Engineering Ltd. — Lethbridge	90,880
Establishment of Water Quality Criteria for Irrigation in Southern Alberta	D.N. Graveland	Monenco Consultants Ltd. — Lethbridge	21,890
Water Conveyance Efficiency Study	M.V. Thompson	Nanuk Engineering — Cochrane, Associated Engineering and Alberta Agriculture — Lethbridge	100,830
Land Resources and Engineering			
Development of Fertilizer Recommendations for Irrigated Grains and Oilseed Crops in Alberta	R.H. McKenzie	Alberta Agriculture and Agriculture Canada — Lethbridge	140,001

Project Title	Project Manager	Institution and Location	Funding Awarded 1984-87
Conservation Tillage Practices for Cereal and Oilseed Crops in the Lower Peace River Region	G.W. Clayton	Agriculture Canada — Fort Vermilion	153,725
Quantification of Soil Erosion in East-Central Alberta	R.W. Howitt	Alberta Research Council — Edmonton	101,450
Increasing Efficiency of Soil and Fall-Applied Fertilizer Nitrogen Under Various Tillage Systems	S.S. Malhi	Agriculture Canada — Lacombe	76,139
Feasibility of Zero Tillage in Central Alberta	K.N. Harker	Agriculture Canada — Lacombe	103,100
Study of Water Erosion in the Peace River Region	D.S. Chanasyk	University of Alberta — Edmonton	198,700
Economic Appraisal of On-Farm Drainage	L.P. Apedaile	University of Alberta — Edmonton	15,900
Improving the Efficiency of Soil Nitrogen and Fertilizer Nitrogen for Different Tillage-Straw Systems	M. Nyborg	University of Alberta — Edmonton	193,466
Nutrient Supply and Budgets in Luvisolic Soils: Use of Manure and Role of Organisms	J.A. Robertson	University of Alberta — Edmonton	264,745
Effects of Post-Harvest Cultivation Practices on Springtime Soil Moisture	D.S. Chanasyk	University of Alberta — Edmonton	10,900
Study of Heat and Moisture Loads and Air Quality in Commercial Poultry Breeding Facilities	J.B. McQuitty	University of Alberta — Edmonton	48,870
Increasing Fertilizer Nitrogen Efficiency Through Fertigation	J.M. Carefoot	Agriculture Canada — Lethbridge, Vancouver	90,030
Evaluation and Development of Furrow Openers for Seed and Fertilizer Placement Under No-Till Conditions	C.W. Lindwall	Agriculture Canada — Lethbridge	286,380
Effects of Soil Buffering Capacity on Phosphorus Fertilizer Recommendations	J. Ashworth	Norwest Soil Research Ltd. — Edmonton	15,550
Investigation of Hydrogeological Processes Influencing Dryland Salinity	R. Stein	Alberta Research Council — Edmonton	126,968
Interference with Phosphate Uptake from Multi-Nutrient Deep Bands	J.T. Harapiak	Western Co-operative Fertilizers Ltd. — Calgary	7,650
Determination of Dominant Recharge Areas for Saline Seeps and Assessment of Saline Seep Control Measures	M.J. Hendry	Alberta Agriculture — Lethbridge	184,999
Comparison of Nitrogen Sources for Topdressing of Winter Wheat in Southern Alberta	T.L. Roberts	Alberta Soil and Feed Analysis Ltd. — Lethbridge	27,124
Field Mapping and Location Method Using Radio Signal Triangulation	J. Baker	Baker Engineering Enterprises Ltd. — Edmonton	44,137
Physical-Chemical Effects of Nitrogen Fertilizers on Soils	M.J. Dudas	University of Alberta — Edmonton	24,670
Animal Health Monitoring and Electronic Identification Using Radiotelemetry Techniques	J.E. Maloney	Scicon — Calgary, and Biochek Alberta Ltd. — Priddis	68,536
Non-Ruminant Livestock			
Development of a Serodiagnosis for Porcine Mycoplasmal Pneumonia	G.W. Stemke	University of Alberta — Edmonton	137,394
Nutritional and Biochemical Studies in Horses	N.F. Cymbaluk	Western College of Veterinary Medicine — Saskatoon	72,024
Prevention and Control of *Haemophilus pleuropneumoniae* in Swine	P.J. Willson	Veterinary Infectious Disease Organization and Western College of Veterinary Medicine — Saskatoon	155,854
Cell Culture System for Production of a Vaccine for Hemorrhagic Enteritis in Turkeys and Splenomegaly in Chickens	J. van den Hurk	Veterinary Infectious Disease Organization — Saskatoon	176,819
Comparison of Fertility of Frozen Semen, Fresh Semen and Natural Service in Swine Herds	E.G. Maynard	Alberta Agriculture — Edmonton	51,500
Mobile Nylon Bag Technique for Determining the Nutritive Value in Feedstuffs for Pigs	W.C. Sauer	University of Alberta — Edmonton	50,900

Project Title	Project Manager	Institution and Location	Funding Awarded 1984-87
Blood Chemistry Behavior of Chickens Exhibiting the Sudden Death Syndrome	J.R. Hunt	Agriculture Canada — Agassiz	47,300
Utilization of Canola Seed by Laying Hens	A. Shires	University of Alberta — Edmonton	28,000
Amino Acid Nutrition in Swine	W.C. Sauer	University of Alberta — Edmonton	32,400
Protein Metabolism During Fever and Infection in Domestic Livestock	V.E. Baracos	University of Alberta — Edmonton	112,888
Study of Reproductive Performance and Hormonal Status of Sows After Weaning	F.X. Aherne	University of Alberta — Edmonton, and Agriculture Canada — Lacombe	16,450
Effects of Weight and Fat Loss During Lactation on Sow Productivity and Hormone Status	F.X. Aherne	University of Alberta — Edmonton	42,985
Interaction Between Feed Intake During Lactation and Pregnancy, and Sow Reproductive Performance	F.X. Aherne	University of Alberta — Edmonton	70,900
Determination of Amino Acid Digestibilities with the ^{15}N-Isotope Dilution Technique in Feedstuffs for Pigs	W.C. Sauer	University of Alberta — Edmonton	40,290
Therapy with Pregnant Mare's Serum Gonadotrophin (PMSG) to Control Ovulation Rate and Return to Estrus in Sows	S.W. Bauck	Central Swine Veterinary Services — Beiseker, and Davis-Rairdan Veterinary Services Ltd. — Crossfield	21,310
Processing, Transportation, Marketing and Socio-Economics			
Blending of Low Erucic Acid Rapeseed Oil for Utilization as a Dietary Fat	M.T. Clandinin	University of Toronto — Toronto	58,930
Impact of Trade Barriers on the Canadian Canola Crushing Industry	C.A. Carter	University of Manitoba — Winnipeg	25,500
Quality Evaluation of Canola Oils and Canola Oil Products	Z.J. Hawrysh	University of Alberta — Edmonton	82,875
Analysis of the Farm Production Unit with Recommendations for Improving Net Farm Income	N. Keating	University of Alberta — Edmonton	32,640
Implications of *Salmonella* Contamination of Poultry Meat for Poultry Producers	M.E. Stiles	University of Alberta — Edmonton	70,500
Effects of Efficient Procedures and New Technologies on Beef Quality	Z.J. Hawrysh	University of Alberta — Edmonton	60,000
Effects of Electrical Stimulation on Calcium Activated Neutral Protease and Z-Disc Actin in Beef	F.H. Wolfe	University of Alberta — Edmonton	206,000
Analysis of Terramycin (Oxytetracycline) in Honey	P. Sporns	University of Alberta and Alberta Agriculture — Edmonton	33,200
Beef Price Cycle and Responses by Western Cow-Calf Producers to Changing Prices	J.D. Graham	University of British Columbia — Vancouver	12,984
Farm Management Field Laboratory (Phase 2)	M.L. Lerohl	University of Alberta — Edmonton	59,190
Engineering Development and Economic Analysis of the Dehydrocooling Process	M. Le Maguer	University of Alberta — Edmonton	161,566
Economic Assessment of Alternative Brush Control Methods for Development and Maintenance of Alberta Grazing Lands	M.L. Lerohl	University of Alberta — Edmonton	26,325
Limiting Pesticide Exposure Through Textile Cleaning Procedures and Selection of Clothing	N. Kerr	University of Alberta and Alberta Agriculture — Edmonton	124,812
Evaluating Debt Contracts for Alberta Farmers: A Sensitivity Analysis	R.G. Aukes	University of Manitoba — Winnipeg	23,670
Integrated Bean Breeding, Bean Marketing Study	J.H. Latham	Alberta Agriculture — Edmonton, and Agriculture Canada — Lethbridge	12,480
Analysis of Family Consumption Expenditures Related to Selected Farm Business Physical and Financial Variables	T.A. Petersen	University of Alberta and Alberta Agriculture — Edmonton	55,800

Project Title	Project Manager	Institution and Location	Funding Awarded 1984-87
Effect of Changing Technology on the Structure of Family Grain Farms in Alberta	L.P. Apedaile	University of Alberta – Edmonton	42,495
Performance of the Rapeseed Futures Market	M.M. Veeman	University of Alberta – Edmonton	41,000
Economic Evaluation of Tillage Management Systems in the Dark Brown Soil Zone	L. Bauer	University of Alberta – Edmonton	57,630
Export Markets for Western Canada Wheat: Trends and Market Mix	M.M. Veeman	University of Alberta – Edmonton	39,750
Productivity Growth and Profitability in the Prairie Grains Sector	T.S. Veeman	University of Alberta – Edmonton	55,850
Incorporating Barley, Interest Rate and Exchange Rate Futures Contracts into the Hedging Program of an Alberta Beef Producer	W.A. Kerr	University of Calgary – Calgary	2,750
Retirement and Farm Transfer	N. Keating	University of Alberta – Edmonton	40,000
Study of Glucose Oxidase and Its Use in Preventing Non-Enzymatic Browning in Potato Products	B. Ooraikul	University of Alberta – Edmonton	35,000
Evaluation of the Effects of Non-Meat Ingredients on Functional Properties of Meat Emulsions	F.H. Wolfe	University of Alberta and Gainers Inc. – Edmonton	16,000
Macro-Economic Influences on Alberta Farmland Values	M.M. Veeman	University of Alberta – Edmonton	21,000
Development and Testing of Prototype Equipment for the Manufacture of Stuffed Potatoes	J.K. Iwabuchi	I & S Produce Ltd. – Edmonton	127,000
Farinaceous Properties of Alberta Cereals and Pulses Subjected to Dry Extrusion	P. Bibby	UFL Foods Ltd. and University of Alberta – Edmonton	98,000
Impact of Grain Price Pooling on Alberta Farmer Returns and Prairie Transport Patterns	M.L. Lerohl	University of Alberta – Edmonton	22,900
Yield Differences Between U.S. and Canadian Beef Grades	R.J. Tchir	Alberta Agriculture – Edmonton, and Agriculture Canada – Lacombe	20,000
End Use of Canadian Wheat and Its Relationship to the Grading System	C.A. Carter	University of Manitoba – Winnipeg	35,000
Economic Value of Research, Extension and Outlook Information to Farmers Facing Different Financial Pressures	K.K. Klein	Klein Economic Consulting Ltd – Lethbridge	32,000
Ruminants			
Determination of the Efficacy of Methods Used to Fertility Test Beef Bulls	G.H. Coulter	Agriculture Canada – Lethbridge	101,300
Pathogenesis of "Nervous" Coccidiosis of Cattle	J.E.C. Bellamy	Western College of Veterinary Medicine – Saskatoon	30,000
Studies of the Endocrinology and Seasonality of Ovulation and Estrus in the Ewe	N.C. Rawlings	Western College of Veterinary Medicine – Saskatoon	57,000
Ralgro Effects on Production Traits, Carcass Yield and Meat Quality of Young Bulls	J.A. Newman	Agriculture Canada – Lacombe	35,000
Effects of Barley Bulk Density and Processing Method on Feedlot Performance of Finishing Beef	R.E. Grimson	Lakeside Research – Brooks	38,000
Bovine Respiratory Disease in Alberta Feedlots	T.L. Church	Alberta Agriculture – Edmonton, and Veterinary Infectious Disease Organization – Saskatoon	265,000
Bovine Respiratory Disease: Virus-Bacterial Interactions	L.A. Babiuk	Western College of Veterinary Medicine – Saskatoon	196,000
Bovine Enteric Viruses: Use of Monoclonal Antibodies to Identify Neutralizing Antigens	L.A. Babiuk	Western College of Veterinary Medicine – Saskatoon	112,000
Effect of Nutrients on Reproductive Function	J.G. Manns	Western College of Veterinary Medicine – Saskatoon	174,700

Project Title	Project Manager	Institution and Location	Funding Awarded 1984-87
Field Testing of an *E. coli*-Rotavirus-Coronavirus Vaccine for Calf Scours	S.D. Acres	Veterinary Infectious Disease Organization – Saskatoon	71,000
Identification and Purification of Protective *Pasteurella haemolytica* Antigens for Use as a Shipping Fever Vaccine	T.J.G. Raybould	Veterinary Infectious Disease Organization – Saskatoon	62,000
Mechanism Mediating Ruminal Stasis in Ruminal Lactic Acidosis (Grain Overload)	E.C. Crichlow	Western College of Veterinary Medicine – Saskatoon	47,000
Investigation of Depression and Death in Scouring Calves Caused by Acidosis: Pathogenesis and Treatment	J.M. Naylor	Western College of Veterinary Medicine – Saskatoon	56,000
Evaluation of New Protein Systems for Dairy Cows	J.J. Kennelly	University of Alberta – Edmonton	129,000
Efficiency of Utilization of Forage Energy	G.W. Mathison	University of Alberta – Edmonton	70,000
Field Testing the University of Alberta Beef Synthetic Bulls	M.H. Makarechian	University of Alberta – Edmonton	10,000
Livestock Growth and Meat Production	M.A. Price	University of Alberta – Edmonton	55,000
Foraging Efficiency of Wapiti	R.J. Hudson	University of Alberta – Edmonton	27,000
Sulfur Dioxide Preservation of Damp Feed Grain	L.P. Milligan	University of Alberta – Edmonton	29,000
Rumen Particle Size Reduction and Movement	L.P. Milligan	University of Alberta – Edmonton	73,000
Nuclear Magnetic Resonance Examination of Forages	L.P. Milligan	University of Alberta and Alberta Agriculture – Edmonton	81,000
Regulation of Skeletal Muscle Protein Growth in Cattle	J.R. Thompson	University of Alberta – Edmonton	165,500
Nutrient Effects on Energy Metabolism, Appetite and Cold Tolerance	R.J. Christopherson	University of Alberta – Edmonton	83,000
Cold Resistance in Cattle	R.J. Christopherson	University of Alberta – Edmonton	77,000
Influence of Temperature on Protein and Amino Acid Digestion in Ruminants	R.J. Christopherson	University of Alberta – Edmonton	97,500
Microbial Digestion of Straw Chemically Treated and Supplemented to Improve its Nutrient Yield for Ruminants	K.-J. Cheng	Agriculture Canada – Lethbridge, and University of Calgary – Calgary	141,000
Effects of Prebreeding Exposure to Bulls on Reproductive Performance of Beef Heifers	M.H. Makarechian	University of Alberta – Edmonton	10,000
Factors Influencing Reproductive Efficiency of Beef Cattle	M.H. Makarechian	University of Alberta and Alberta Agriculture – Edmonton	15,000
Effects of Early Weaning on Post-Weaning Performance of the Calf and Dam	M.H. Makarechian	University of Alberta – Edmonton	25,000
Economic Analysis of the Impact of Delayed Breeding of Dairy Cows on Milk Production and Herd Health	J.J. Kennelly	University of Alberta – Edmonton	55,000
Effects of Dietary Protein and Sulfur Supplements and Hormonal Implants on Growth Responses of Beef Steers	R.E. Grimson	Lakeside Research – Brooks	37,500
Lamb Quality and Cutability Assessment in Relation to Carcass Grades and Processing and Packaging Systems	L.E. Jeremiah	Agriculture Canada – Lacombe	160,000
Nutrition and Management of Wapiti	R.J. Hudson	University of Alberta – Edmonton	69,000
Effect of Beta-Glucans in Barley on Digestion and Metabolism in Ruminants	G.W. Mathison	University of Alberta – Edmonton	48,800
Effect of Growth Hormone and Frequency of Feeding on Milk Production and Milk Composition in Dairy Cows	J.J. Kennelly	University of Alberta – Edmonton	80,000
Protein and Energy Nutrition of Dairy Calves	W.C. Sauer	University of Alberta – Edmonton	60,000
Influence of Preweaning and Postweaning Growth Rate on the Reproductive Performance of Beef Heifers	M.A. Price	University of Alberta – Edmonton	73,000

Project Title	Project Manager	Institution and Location	Funding Awarded 1984-87
Manipulation of Hormones in Sheep and Cattle to Improve Their Growth Rates	G.J. Mears	Agriculture Canada — Lethbridge	84,000
Improving the Nutritive Value of Straw	G.W. Mathison	University of Alberta — Edmonton	17,800
Effect of Silage Fermentation Enhancers on the Fermentation Characteristics of Corn and Barley Silage and on the Feeding Value of Barley Silage	R.E. Grimson	Lakeside Feeders Ltd. — Brooks	20,000
Factors Influencing the Efficiency of Protein (Amino Acids) and Energy Utilization by Dairy Cows	J.J. Kennelly	University of Alberta — Edmonton	65,000
Production of Large Numbers of Genetically Identical Calves (Clones) by Nuclear Transplantation	B.F. Shea	Alberta Livestock Transplants Ltd. — Calgary	85,000
Investigation of the Best Treatment for Scouring Calves	J.M. Naylor	Western College of Veterinary Medicine — Saskatoon	18,000
Growth Hormone for Dairy Cattle: Mode of Action and Effect on Milk Production and Reproductive Performance	J.J. Kennelly	University of Alberta — Edmonton	80,000
Development of Assays to Determine the Role of *P. haemolytica* Leukotoxin in Shipping Fever Pneumonia	M.J.P. Lawman	Veterinary Infectious Disease Organization — Saskatoon	45,000
Energetic Efficiencies of Ruminants	G.W. Mathison	University of Alberta — Edmonton	28,000
Within and Between Breed Variation in Cold Hardiness of Cattle	B.A. Young	University of Alberta — Edmonton	38,000
Efficiency Models in Cow-Calf Systems	R.T. Berg	University of Alberta — Edmonton	11,000
Special Crops			
New Sensitive Assays Utilizing Specific Monoclonal Antibodies for Testing Potato Virus and Bacterial Diseases	S.H. De Boer	Agriculture Canada — Vancouver	148,800
Development of Sugar Beet Handling Procedures that Reduce Sugar Losses During Sugar Beet Harvest and Storage	P. Bergen	Alberta Sugar Company — Taber, and Alberta Sugar Beet Growers Marketing Board — Lethbridge	24,100
Rooting of *In vitro*-Produced Shoots of Saskatoon *(Amelanchier alnifolia)*	R.E. Harris	Rural Propagating Laboratory — Victoria	25,680
Field Production of Cut Flowers for Alberta Markets	B.J. Godwin	Olds College — Olds	9,900
Influence of Physiological Age of Seed Tubers on the Yield of Alberta Potatoes	W.T. Andrew	University of Alberta — Edmonton	24,900
Development of a Monitoring Program for Control of the Sugar Beet Root Maggot in Sugar Beets	G.H. Whitfield	Agriculture Canada — Lethbridge, and Alberta Sugar Company — Taber	50,236
Alternative Crop Varietal Development: Irrigated Soybeans and Dryland Safflower	H.H. Muendel	Agriculture Canada — Lethbridge	191,528
Regional Potato Cultivar Evaluation	D.R. Lynch	Agriculture Canada — Lethbridge	267,188
Perennial Flowers for Fresh and Dried Markets	B.J. Godwin	Olds College — Olds	20,750
Special Crops Agronomic Studies for Central and North Central Alberta	F.M. Mederick	Alberta Agriculture — Lacombe	96,996
Evaluation of Fertilizer Regimes for Potted Nursery Stock	E.B. Casement	Alberta Agriculture — Brooks, and Eagle Lake Nurseries — Strathmore	11,241
Improved Molecular Diagnosis of Potato Spindle Tuber Disease	C. Hiruki	University of Alberta — Edmonton	44,400

Research Program Project Summaries *1987-88*

Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1987-88
Cereals and Oilseeds			
Breeding Regionally Adapted Canola Cultivars for Alberta Growing Areas • to develop high yielding, disease resistant canola varieties adapted to the Peace River region and to southern Alberta	R.K. Downey	Agriculture Canada – Saskatoon	80,000
Evaluation and Development of Soft White Spring Wheats for Western Canada • to develop high yielding soft white wheats with good resistance to disease and to sprouting	R.S. Sadasivaiah	Agriculture Canada – Lethbridge	77,400
Identification of Cold Hardy, Snow Mold Resistant Winter Wheat Lines for Central and Northern Alberta • to screen and test lines of winter wheat, triticale and related grasses which are cold hardy and resistant to snow mold	D.A. Gaudet	Agriculture Canada – Lethbridge	34,700
Acceleration of Canola Variety Development for the Peace River and Southern Alberta Regions • to develop canola varieties adapted to conditions in the Peace River region and to irrigated and dryland conditions in southern Alberta	D.L. Woods	Agriculture Canada – Beaverlodge and Lethbridge	245,000
Intensive Management Systems for Barley, Wheat and Canola Production • to determine the effects of fertilizers, plant growth regulators, pesticides and stand density on barley, wheat and canola yields	D.C. Penney	Alberta Agriculture - Edmonton and Lacombe	70,000
Crop Protection and Entomology			
Development and Improvement of New Toxic Baits for Grasshopper Control • to assess and improve various insecticide baits and methods of application	D.L. Johnson	Agriculture Canada - Lethbridge	62,000
Development of Improved Methods of Forecasting Grasshopper Distribution and Abundance • to determine the relationship between weather variables and grasshopper populations and to use this information to improve prediction of outbreaks	D.L. Johnson	Agriculture Canada - Lethbridge, and Alberta Agriculture - Edmonton	38,000
Pale Western Cutworm: Prediction of Local and Field Infestation Risk Using Sex-Attractant Traps • to monitor moth abundance for improved prediction of outbreaks and to assess the effectiveness of insecticide treatments	J.R. Byers	Agriculture Canada - Lethbridge	45,130
Quackgrass Control in Zero and Conventional Tillage Systems • to assess the effects of using precisely timed, low rate applications of glyphosate (Roundup) and sethoxydim (Poast) for quackgrass control	K.N. Harker	Agriculture Canada - Lacombe, and University of Alberta - Edmonton	11,557
Improving Herbicide Efficiency on Quackgrass and Other Perennial Weeds Which Have Dormant Buds Using PGRs • to determine the effects of plant growth regulators (PGRs) on herbicide efficiency and to test promising herbicide-PGR treatments	J.S. Taylor	Agriculture Canada - Lacombe	23,713
Field Trials of Methods to Induce Synchronous Germination of Dormant Weed Seeds in Alberta Soils • to evaluate the use of ethylene and nitrate on germination of wild oats, lamb's-quarters, stinkweed and wild mustard for more efficient weed control	M.E. Spencer	University of Alberta - Edmonton	36,735
Development of an Efficient Air Filtration System for Spray Vehicle Cabs Used for Carbofuran Spray Applications • to develop and test prototype systems of cab air filtration to protect against the pesticide carbofuran	E.J. Love	University of Calgary - Calgary	36,200
Evaluation of Protective Work Wear for Agricultural Workers • to test currently available and new work clothing for pesticide penetration	E.M. Crown	University of Alberta and Alberta Agriculture - Edmonton	45,000
Forages			
Low Temperature Nitrogen Fixation for Alfalfa • to evaluate selected strains of *Rhizobia* bacteria for their ability to fix nitrogen in cool conditions	W.A. Rice	Agriculture Canada - Beaverlodge	50,000
Yield and Quality of Pasture Grasses During Initial Spring Growth and Fall Regrowth • to determine how plant maturity, structure and shape are related to the yield and quality of various pasture grasses	V.S. Baron	Agriculture Canada - Lacombe, and University of Alberta - Edmonton	36,000
Feasibility of Double Cropping and Intercropping of Winter Cereals for Fall Pasture • to assess intercropping and double cropping of spring and winter cereals as a means of extending the grazing season	V.S. Baron	Agriculture Canada and Alberta Agriculture - Lacombe	50,000

Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1987-88
Effect of Grazing on Forage and Beef Production from Rough Fescue Rangeland in Central Alberta • to determine the effects of six grazing treatments on rough fescue production and utilization	A.W. Bailey	University of Alberta - Edmonton	52,000
Yield, Preservation and Nutritive Value of Moist Hay • to assess the effects of moisture content and preservatives on the quality of hay	G.W. Mathison	University of Alberta - Edmonton	44,000
Germination and Establishment of Pasture Grass Species • to study pasture grass germination and establishment as related to seeding rates and dry matter yields	J.R. King	University of Alberta - Edmonton	22,000
Coating of Forage Legume Seeds with *Rhizobium* Inoculants • to improve the method of inoculating small seeded legumes with nitrogen fixing bacteria	W.T. Leps	Alberta Research Council - Edmonton	31,000
Production of *Rhizobium meliloti* Inoculants for Alfalfa by Process-Controlled Fermentations • to develop efficient and economical methods for production of nitrogen fixing inoculants for alfalfa	W.T. Leps	Alberta Research Council - Edmonton	31,000
Irrigation			
Irrigation Scheduling to Maximize Yield of Soft White Wheat Under Intensive Crop Management • to compare the effects of frequent irrigation for the entire growing season versus irrigation for only a critical part of the growing season	J.M. Carefoot	Agriculture Canada - Lethbridge	33,595
Water Conveyance Efficiency Study • to determine the relationship between canal water losses and such factors as canal lining material, groundwater level, and water surface evaporation	M.V. Thompson	Nanuk Engineering - Cochrane, and Alberta Agriculture - Lethbridge	82,070
Comparison of Deep Interceptor Drains and On-Farm Grid Drains for Canal Seepage Control and Reclamation • to evaluate the relative effectiveness and cost of deep interceptor drains and shallow on-farm grid drains for canal seepage control	M.R. Chaudhary	CH2M Hill - Calgary, and Alberta Agriculture - Lethbridge	44,980
Land Resources and Engineering			
Development of Fertilizer Recommendations for Irrigated Grain and Oilseed Crops in Alberta • to develop nitrogen and phosphorus recommendations for irrigated soft white spring wheat, durum wheat, utility wheat, a new medium quality wheat, canola and flax	R.H. McKenzie	Alberta Agriculture and Agriculture Canada - Lethbridge	55,000
Furrow Openers for Seed and Fertilizer Placement in Minimum Tillage Systems • to evaluate furrow openers for seed and fertilizer placement in terms of equipment design characteristics and economics	C.W. Lindwall	Agriculture Canada - Lethbridge	104,000
Self-Calibrating Chemical Injection Metering System • to develop a system to automatically compensate for changes in the viscosity of agricultural chemicals in order to improve the accuracy of spray application rates	K.A. Robertson	Baker Electronic Enterprises Inc - Edmonton	21,000
Conservation Tillage in the Lower Peace River Region • to determine the effects of conservation tillage on grain yields and soil characteristics	G.W. Clayton	Agriculture Canada - Fort Vermilion	48,000
Study of Air Quality in Commercial Turkey Rearing Facilities • to investigate the relationship between aerial contaminants and turkey health	J.J.R. Feddes	University of Alberta - Edmonton	32,000
Effects of Crop Management Practices on Infiltration • to quantify the effects of agricultural management practices on soil moisture and temperature	D.S. Chanasyk	University of Alberta - Edmonton	15,000
Long-Term Influence of Tillage, Straw and Nitrogen on Soil Characteristics and Crop Yield • to evaluate the effects of zero tillage versus conventional tillage, straw retention versus removal, and timing and method of nitrogen application on crop yield	M. Nyborg	University of Alberta - Edmonton	51,000
On-Site Biotechnologies for Soil Conservation and Risk Management on Luvisolic Soils • to develop cropping systems which conserve soil, are economically sound and use biological nitrogen fixation where practical	W.B. McGill	University of Alberta - Edmonton	65,000
Annual Legume Plowdown to Replace Cultivated Fallow • to develop guidelines for the use of annual legume plowdown in order to maintain and improve soil nitrogen and organic matter levels	T.L. Jensen	Alberta Agriculture - Edmonton	53,000
Determination of Dominant Recharge Areas for Saline Seeps and Assessment of Saline Seep Control Measures • to compare two techniques for controlling and reclaiming saline seeps under dryland conditions	M.J. Hendry	Alberta Agriculture - Lethbridge	50,000
Quantification of Soil Erosion in East Central Alberta • to develop a predictive model to estimate soil erosion and deposition	R.W. Howitt	Alberta Research Council - Edmonton	35,000

Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1987-88
Non-Ruminant Livestock			
Development of Serodiagnosis for Porcine Mycoplasmal Pneumonia • to develop a diagnostic test to identify animals infected with enzootic porcine pneumonia	G.W. Stemke	University of Alberta - Edmonton	45,650
Infrared Thermography for Detecting Pigs Prone to Producing Pale, Soft Exudative Pork • to evaluate the potential of infrared thermography for detecting pigs likely to produce poor quality pork	A.P. Sather	Agriculture Canada - Lacombe	23,465
Improving Reproductive Performance in Sows Selected for Lean Tissue Growth Rates • to assess the effects of a high protein diet for sows on prenatal and postnatal piglet growth and performance	A.L. Schaefer	Agriculture Canada - Lacombe	15,232
Protein Metabolism During Fever and Infection in Domestic Livestock • to study the effects of fever on muscle tissue growth in broiler chicks in order to develop optimal management strategies for the care of infected livestock	V.E. Baracos	University of Alberta - Edmonton	40,269
Effects of Prepubertal Nutrition on the Onset of Puberty and Ovulation Rate in Gilts • to investigate the influence of nutrition on the age and weight of gilts at puberty, and on ovulation rate	F.X. Aherne	University of Alberta - Edmonton	36,575
Determination of Amino Acid Digestibilities with the ^{15}N-Isotope Dilution Technique in Feedstuffs for Pigs • to test a new method to measure digestion and absorption of protein for improved diet formulation	W.C. Sauer	University of Alberta - Edmonton	40,750
Involvement of Diet in the Sudden Death Syndrome in Broilers • to identify the dietary and environmental regimes associated with high incidence of sudden death syndrome in broilers	R. Blair	University of British Columbia - Vancouver	31,440
Processing, Transportation, Marketing and Socio-Economics			
End Use of Canadian Wheat and Its Relationship to the Grading System • to assess the relationship between the factors used in grading Canadian wheat, the characteristics desired by importers, and the prices for wheat	A.G. Wilson	University of Manitoba - Winnipeg	33,000
Effects of Rapid Chilling on Pork Quality • to study the effects of rapid chilling of pork carcasses on carcass yield, meat tenderness, and the development of poor quality meat	S.D. Morgan Jones	Agriculture Canada - Lacombe	30,000
Immobilization Technology for Accelerated Canola Sauce Fermentation • to develop a technique to reduce the costs and time needed in production of a canola substitute for soy sauce	B. Ooraikul	University of Alberta - Edmonton	42,000
Economic Evaluation of Tillage Management Systems in the Dark Brown Soil Zone • to investigate the costs and returns associated with different tillage practices	L. Bauer	University of Alberta - Edmonton	47,500
Structural Projections for Alberta Grain Production to Year 2001 • to develop quantitative projections for the changing structure of the Alberta grain industry	L.P. Apedaile	University of Alberta - Edmonton	28,000
Macro-Economic Influences on Agriculture in Alberta • to study the effects of interest rates, exchange rates and national economic policies on net farm income and asset values	M.M. Veeman	University of Alberta - Edmonton	22,000
Market Share Competition in World Wheat Markets • to analyze the relative importance of price, quality and "brand loyalty" on market shares of wheat	M.M. Veeman	University of Alberta - Edmonton	27,000
Longevity and Genetic Improvement Issues in Economic Replacement Strategies for Dairy Cattle • to determine economically optimum strategies for deciding when to replace aging dairy cows	L. Bauer	University of Alberta - Edmonton	17,000
Role of Fertilizer, Weather and Fertilizer-Weather Interactions in Prairie Grain Production and Productivity • to analyze the effects of fertilizers and weather on grain productivity	T.S. Veeman	University of Alberta - Edmonton	38,000
Estimation of Risks and Returns from Crop Alternatives • to evaluate on a regional basis the risks and returns on wheat, oats, barley, flax and canola	G.A. Mumey	University of Alberta - Edmonton	17,000
Returns to Farmland Investment in Alberta • to compare the rate of return on investment in farmland with rates of return on other financial assets	W.E. Phillips	University of Alberta - Edmonton	17,000
Use of Biotechnology to Develop Innovative Systems for Preservation of Meats • to select and develop strains of bacteria to inhibit spoilage and disease causing bacteria in meats	M.E. Stiles	University of Alberta - Edmonton	41,000
Quality Evaluations of Antioxidant Treated Canola Oils • to study the storage and heat stability of canola oils treated with antioxidants and combinations of antioxidants	Z.J. Hawrysh	University of Alberta - Edmonton	43,000

Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1987-88
Potential Dairy Sector Adjustments to the Widespread Adoption of Bovine Growth Hormone • to assess the effects of possible increased milk production on economic competitiveness in Alberta's dairy industry	K. Nicol	University of Lethbridge - Lethbridge	29,000
Feasibility of Lactic Acid Starter Culture Production in Alberta • to evaluate various strains of bacteria used in cheese production in order to begin a starter culture industry in Alberta	M.E. Stiles	University of Alberta - Edmonton	33,000
Evaluation of the Effects of Non-Meat Ingredients on Functional Properties of Meat Emulsions • to determine the effects of higher levels and mixtures of non-meat ingredients in processed meat products	F.H. Wolfe	University of Alberta and Gainers Inc. - Edmonton	36,000
Evaluation of the Differential Formula Multicomponent Pricing Scheme for Alberta Milk • to develop and test a method for pricing milk which incorporates protein and lactose content along with butter fat content	F.H. Wolfe	University of Alberta - Edmonton	34,000
Ruminant Livestock			
Vitamin E and Selenium Deficiency: Immunological Manifestations • to study the effects of vitamin E and selenium deficiencies on disease problems in livestock	B. Blakley	Western College of Veterinary Medicine - Saskatoon	29,000
Manipulation of Hormones in Calves to Improve Their Rate of Growth • to evaluate methods of immunizing calves against somatostatin (an inhibitor of growth hormone release), and to determine the effects of this immunization on calf growth rates	G.J. Mears	Agriculture Canada - Lethbridge	45,000
Application of Infrared Thermography and Ultrasonography for Diagnosis of Reproductive Problems in Beef Bulls • to develop infrared thermography and ultrasonography as diagnostic tools in assessing reproductive characteristics of bulls	G.H. Coulter	Agriculture Canada - Lethbridge	40,000
Development of Digestion Enhancement Agents to Convert Supplemented Chemically Treated Straw to an Effective Ruminant Feed • to test the effects of digestion enhancing agents and supplements on the nutritional quality and digestibility of barley and wheat straws	K.-J. Cheng	Agriculture Canada - Lethbridge, and University of Calgary - Calgary	56,000
Effect of Rumen Microbial Metabolism on Selenium Requirements of Ruminants • to study availability of selenium under different dietary regimes in order to more accurately determine selenium requirements	L.M. Rode	Agriculture Canada - Lethbridge	40,000
Mechanism Mediating Ruminal Stasis in Ruminal Lactic Acidosis (Grain Overload) • to develop treatments to restore forestomach motility lost due to grain overload and so reduce the severity of this condition	E.C. Crichlow	Western College of Veterinary Medicine - Saskatoon	24,000
Vaccines Against Viruses Causing Bovine Respiratory Disease • to reduce losses due to shipping fever through developing better vaccines and improving the animal's ability to fight off the disease	L.A. Babiuk	Western College of Veterinary Medicine - Saskatoon	60,000
Bovine Enteric Viruses: Diagnosis and Protection by Vaccines • to create a rapid test for diagnosing agents which cause scours, and to develop a more effective vaccine so the dam can pass immunity to her calf	L.A. Babiuk	Western College of Veterinary Medicine - Saskatoon	42,000
Lamb Quality and Cutability Assessment in Relation to Carcass Grades and Processing and Packaging Systems • to evaluate the effects of processing, and of age, weight, sex and fatness characteristics on palatability and acceptability of lamb	L.E. Jeremiah	Agriculture Canada - Lacombe	96,000
Effect of Silage Fermentation Enhancers on the Fermentation Characteristics and Feeding Value of Alfalfa and Barley Silage • to compare feedlot performance of growing beef cattle fed silage treated with one of three silage additives	R.E. Grimson	Lakeside Feeders Ltd - Brooks	50,000
Factors Influencing the Efficiency of Protein (Amino Acids) and Energy Utilization by Dairy Cows • to study amino acid utilization in dairy cattle in order to more accurately determine feed requirements	J.J. Kennelly	University of Alberta - Edmonton	62,000
Endocrinological and Genetic Analysis of Superior Growth in Cattle • to characterize hormonal and genetic factors involved in growth regulation in cattle	R.K. Salmon	University of Alberta - Edmonton	25,000
Influence of Temperature on Protein and Amino Acid Digestion in Ruminants • to assess the effect of a cold environment on amino acid digestion and to determine optimal dietary requirements in cold and warm environments	R.J. Christopherson	University of Alberta - Edmonton	30,000
Within and Between Breed Variation in Cold Hardiness of Cattle • to determine individual and breed variation in cold hardiness and metabolic capacity of calves	B.A. Young	University of Alberta - Edmonton	35,000
Improving the Nutritive Value of Straw • to develop a cheaper and more effective chemical treatment to improve the nutritive value of straw	G.W. Mathison	University of Alberta - Edmonton	25,000

Project Title and Objective	Project Manager	Institution and Location	Funding Awarded 1987-88
Energetic Efficiencies of Ruminants • to investigate the effects of two compounds on lean tissue growth and fat deposition	G.W. Mathison	University of Alberta - Edmonton	28,000
Studies on the Molecular Genetics and Endocrinological Basis of Muscle Growth in Double Muscled Cattle • to identify specific growth regulating genes which can be manipulated to enhance red meat production	M.A. Price	University of Alberta - Edmonton	20,000
Efficiency Models in Cow-Calf Systems • to establish the relationship between the efficiency of production and the degree of maturity in cow-calf systems	R.T. Berg	University of Alberta - Edmonton	12,000
Development of Assays to Determine the Role of *P. haemolytica* Leukotoxin in Shipping Fever Pneumonia • to identify and isolate the components of a bacterial pathogen which enable it to cause shipping fever in cattle	M.J.P. Lawman	Veterinary Infectious Disease Organization - Saskatoon	50,000
Growth Hormone for Dairy Cattle: Mode of Action and Effect on Milk Production and Reproductive Performance • to determine the influence of growth hormone on milk yield and reproductive performance of dairy cows	J.J. Kennelly	University of Alberta - Edmonton	75,000
Interactions Between Nutrition and Reproduction in Postpartum Beef Cows • to investigate the effects of nutrient intake, growth hormone and an insulin-like growth factor on the return of estrus in cows	J.G. Manns	Western College of Veterinary Medicine - Saskatoon	59,000
Special Crops			
Development of Potato Cultivars for Alberta • to develop early maturing cultivars with good storage and processing qualities and to develop cultivars with superior yield, disease resistance and storage characteristics	D.R. Lynch	Agriculture Canada - Lethbridge	90,756
Safflower Management for Optimizing Yield and Quality • to evaluate safflower management techniques in order to prepare a detailed safflower production package	H.H. Muendel	Agriculture Canada and Alberta Agriculture - Lethbridge	55,500
Control of Bacterial Ring Rot and Blackleg Symptomless Infections of Potatoes • to study the symptomless phases of two potato diseases to determine the conditions necessary for their occurrence	S.H. De Boer	Agriculture Canada - Vancouver	64,000
Evaluation of Fertilizer Regimes for Potted Nursery Stock • to compare the effects of the slow release of fertilizer with those of continuous fertilizer application through an irrigation system	E.B. Casement	Alberta Agriculture - Brooks, and Eagle Lake Nurseries Ltd. - Strathmore	5,236
Increasing Tuber Yield and Earliness by Manipulating the Physiological Age of Potato Seed Tubers • to investigate the effects of storage temperature on tuber yield, grade and earliness	N.R. Knowles	University of Alberta - Edmonton	65,462
Agronomic Studies Emphasizing Uniform, Earlier Establishment and Maturity of Cool Season Pulse Crops • to study various agronomic practices for improved production of lentils, peas and fababeans	R.G. Gaudiel	Alberta Agriculture - Brooks and Lacombe	48,268

On-Farm Demonstration Program
Project Summaries *Second Mandate*

Project Title and Objective	Principal Co-operator/ Project Location	Project Co-ordinator/ Office	Funding 1984-86	Awarded 1986-87
Region I - Southern Alberta				
Evaluation of the Warm Treatment of Swine Manure • to evaluate a combined solids-liquids separator-warm treatment process	Al Coutts *Bow Island*	Gregg Dill *Lethbridge*	15,561	report pending
Savory Grazing Method • to determine the effectiveness of Savory Grazing under commercial ranch conditions	Blake Holtman Mary Holtman *Taber Fort Macleod*	Carole Rex *Taber* Ted Nibourg *Claresholm*	17,023	17,100
Alfalfa in Controlling Saline Seeps • to compare the use of taproot and fibrous root alfalfa for reducing saline seeps	William Norris *Warner*	Don Wentz *Lethbridge*	1,263	report pending
Wind Power for Pumping Water • to design simple, low-cost, wind-powered equipment for pumping water	Norman Ward *Granum*	Ted Nibourg *Claresholm*	935	report pending
Phosphate Fertilizer on Alfalfa • to assess the effects of phosphate application on Angus alfalfa	Dan Loewen *Rosemary*	Gordon Frank *Brooks*	143	completed
Electronic Bulletin Board System • to develop a message and information service to be accessed through on-farm computers	Garry Kennedy *Brant*	Dennis Stretch *Vulcan*	1,820	completed
Polypay Sheep • to test the breed in intensive production and to compare its productivity with local breeds and crosses	John Balderson *Magrath*	Jim Hansen *Cardston*	15,050	3,150
Alfalfa Variety Trials • to compare dryland yields of alfalfa varieties and to assess the use of alfalfa in controlling saline seeps	Barry Thomas *Warner*	Don Wentz *Lethbridge*	3,900	report pending
Pure Alfalfa vs Grass-Alfalfa Mix for Rooting Depth • to compare yields and to assess effectiveness in controlling saline seeps	Bruce Atkins *Warner*	Don Wentz *Lethbridge*	3,300	completed
Snow Management • to demonstrate the use of snow management to increase spring soil moisture in a chinook area	Dryland Salinity Control Association *Southern Alberta*	Don Wentz *Lethbridge*	1,500	report pending
Alfalfa Seed Production • to determine the costs and benefits of dryland production and to evaluate the use of alfalfa in reducing saline seeps	Don Welsh *Milk River*	Don Wentz *Lethbridge*	2,775	3,826
Effect of Row Spacing on the Yield of Spring Wheat • to assess the effects of row spacing on yields of dryland Neepawa red spring wheat	Matt Schebel *Lethbridge*	Delyn Jensen *Lethbridge*	1,900	completed
Alfalfa Inoculation • to determine yield differences between inoculated and non-inoculated alfalfa stands and to compare the performance of various inoculants	John Lutz *Warner*	Don Wentz *Lethbridge*	4,200	report pending
Corn Stover Feeding • to assess the use of corn stover through feeding and digestibility trials	Robert Landlaw *Bow Island*	Ruth McMorris *Bow Island*	2,200	report pending
Deep Plowing and Ripping of High Sodium Soils • to compare the effects on yields of using plows and subsoilers	Terry Doran *Bow Island*	Ruth McMorris *Bow Island*	4,280	report pending
Comparison of Conventional vs Acid Fertilizers • to compare the duration of phosphorus availability	Harold Kuehn *Warner*	Ross McKenzie *Lethbridge*	1,650	report pending
Biological Weed Control on Italian Ryegrass Sheep Pasture and Sheep Fence Evaluation • to test the effectiveness of annual ryegrass and sheep in weed control and to evaluate four types of fencing	Geoff de Boer *Barons*	Michael Clawson *Lethbridge*	1,206	completed
Transplanting Sugar Beets from Greenhouse to Field • to evaluate starting sugar beets in a greenhouse to reduce spring losses	Zoltan Gergely *Coaldale*	Michael Clawson *Lethbridge*	11,254	completed
Yield Related to Seeding Width for Dryland Alfalfa • to determine the effects of seeding width on yield and to assess the effect of alfalfa cultivation on saline seeps	Dennis Irvine *Barons*	Don Wentz *Lethbridge*	3,473	2,645
Dryland Alfalfa Fertilizer Trial • to evaluate the effect of fertilizer use and to determine the effectiveness of alfalfa in controlling saline seeps	John Erdman *Barons*	Don Wentz *Lethbridge*	2,873	1,875
On-Farm Slurry Inoculation • to assess inoculation of pulse crops with a slurry application system	Pulse Growers Association of Alberta *Southern Alberta*	Blair Roth *Lethbridge*	7,610	completed

Project Title and Objective	Principal Co-operator/ Project Location	Project Co-ordinator/ Office	Funding 1984-86	Awarded 1986-87
Maximizing Wheat and Corn Yields Under Irrigation • to determine the effects of agronomic practices on yields of soft wheat and grain corn	Alberta Corn Committee *Bow Island, Burdett*	Blair Roth *Lethbridge*	9.060	20.758
Phosphorus Application Trials • to assess the effects of phosphorus on alfalfa and to assess alfalfa cultivation for controlling saline seeps	Barry McFarland *Carmangay*	Don Wentz *Lethbridge*	2.942	report pending
Effect of Water Quality on Broiler Chicken Performance • to assess the use of high quality water in broiler production	Ken Baerg *Pincher Creek*	Narine Singh *Lethbridge*	2.000	completed
Use of Inexpensive Housing with Outside Pens for Feeder Pigs • to compare the costs of housing pigs in wood and straw shelters with the costs of modern feeder barns	Blair Hennes *Medicine Hat*	Alan George *Lethbridge*	3.160	report pending
Canola Meal as an Alternative Protein Supplement for Use in Swine Rations • to assess pig performance, feed costs and days to market	C.R. Andrews *Bow City*	Alan George *Lethbridge*	2.520	completed
Twin Butte Brush Control • to compare the effectiveness of traditional control techniques and mow/spray methods	Michael Cowley *Twin Butte*	Bob Lyons *Pincher Creek*	8.385	7.225
Field Scale Dryland Varietal Trials • to test 28 varieties of wheat, canola, flax and mustard	Edwin Kiffiak *Foremost*	Ray Maubert *Foremost*		1.500
Biological Control of *Sclerotinia* • to evaluate application methods and the effectiveness of a hyperparasite (*Coniothyrium*) in controlling a disease causing organism	Pulse Growers Association of Alberta *Southern Alberta*	Blair Roth *Lethbridge*		22.555
Spring and Winter Wheat Fertilizer Trials • to evaluate fertility response on dryland using recommended fertilizer application rates	Richard Walters *Foremost*	Ray Maubert *Foremost*		1.028
Agronomic and Feed Acceptability of Kochia • to determine yields of kochia on saline soils and to test kochia silage for growing beef and finishing steers	Lakeside Farm Industries Ltd. *Brooks*	Gordon Frank *Brooks*		8.938
Underseeding Silage to Fall Pasture Crops • to determine if production can be increased by underseeding cereal silage crops with winter wheat and Italian ryegrass	Lakeside Farm Industries Ltd. *Brooks*	Brian Palichuk *Brooks*		6.081 completed
Computer Assisted Control of a Pivot Irrigation System • to demonstrate automatic adjustment of pivot speed for greater irrigation efficiency	Dwight Perry *Coaldale*	Michael Clawson *Lethbridge*		3.906
Intensive Management Program for Irrigated Canola • to establish the maximum yield potential of *B. napus* canola under irrigation	George Thacker and Sons *Bow Island*	Blair Roth *Lethbridge*		6.800
Winter Canola Viability Program • to assess the feasibility of winter canola production in Southern Alberta	Knob Hill Farms *Claresholm*	Blair Roth *Lethbridge*		14.140
Intensive Culture of Irrigated Soft White Winter Wheat • to study management practices, yield potential and economic feasibility of different varieties of winter wheat	John Hopkins *Burdett*	Ruth McMorris *Bow Island*		2.713
Region II - South Central Alberta				
Special Crops Demonstration Trial • to examine the feasibility of special crop cultivation	Chinook Applied Research Association *Hanna, Coronation*	Russel Horvey *Hanna*	25.884	7.424
Evaluation of Moisture Conservation by Various Stubble Heights • to determine the effects of stubble height on the quantity of snow trapped	Chinook Applied Research Association *Oyen*	Larry Welsh *Airdrie*	1.976	completed
Evaluation of Moisture Conservation of Continuous Cropping vs Summerfallow Rotation • to measure moisture levels and crop yields	Chinook Applied Research Association *Youngstown*	Russel Horvey *Hanna*	4.840	1.915
Evaluation of Moisture Conservation by Shelterbelts • to determine the effectiveness of shelterbelts in conserving moisture	Chinook Applied Research Association *Altario*	Larry Welsh *Airdrie*	2.319	completed
Pasture Sage Control • to demonstrate chemical sage control	Chinook Applied Research Association *Hanna*	Russel Horvey *Hanna*	1.407	543 completed
Out-of-Season Breeding of Lactating Columbia, Suffolk-Columbia and Hampshire-Columbia Ewes • to investigate the possibility of breeding sheep every eight months through stimulation of lactating ewes	May Lockhart John Lockhart *Okotoks*	John Knapp *Airdrie*	550	completed
Ammoniating Chaff • to determine the feasibility of ammoniating chaff to improve its nutrient value	Hans Mundt *Chinook*	John Ruschkowski *Oyen* Rich Smith *Airdrie*	2.400	completed

Project Title and Objective	Principal Co-operator/ Project Location	Project Co-ordinator/ Office	Funding 1984-86	Awarded 1986-87
Increase of Alfalfa Yields Under Irrigation Using Recommended Fertilizer Application • to demonstrate costs and benefits of using different methods of fertilizer application	Pat Cammaert *Rockyford*	Art Edwards *Strathmore*	2,123	completed
Increasing Hay and Pasture Production on Dryland Using Annuals • to assess Norstar winter wheat as supplementary pasture and to compare the returns from pasture and grain	Henry Cuthbertson *Lyalta*	Art Edwards *Strathmore* Donald Milligan *Airdrie*	4,942	completed
Winter Wheat Production in a Continuous Crop Rotation in South Central Alberta • to evaluate weed control, fertilizer requirements and survival	W M Burton *Olds*	Ron Woolf *Olds*	3,350	completed
Using Electric Fencing as Predator Control for Sheep • to design and construct an electric fence	Bob Francis *Priddis*	John Knapp *Airdrie*	5,112	completed
Norstar Winter Wheat Seeded with Barley Silage for Fall Grazing • to demonstrate underseeding of winter wheat for use as late summer and fall pasture	Robert Carr *Okotoks*	Allen Toly *High River*	4,590	completed
Native Range Direct Reseeding • to evaluate the effects on range productivity of seeding several grass types	Murray Woods *Oyen*	John Ruschkowski *Oyen*	3,800	completed
Early Breeding of Heifers • to compare costs and productivity of breeding at seven to nine months of age versus 14 to 15 months	Donald Bezjack *Cochrane*	Donald Milligan *Airdrie*	790	report pending
Ultrasound Pregnancy Checking for Dairy Cattle • to evaluate ultrasound techniques for determining pregnancy in cows	Dennis Oster *Torrington*	Scott Meers *Three Hills* Donald Milligan *Airdrie*	1,829	completed
Fall Grazing of Winter Annuals Underseeded in Cereal Silage • to demonstrate the use of winter annuals underseeded in an oat/barley crop	Ian Watt *Cremona*	Steve Archibald *Olds* Donald Milligan *Airdrie*	3,635	completed
Rotational Grazing Demonstration • to assess costs, stocking rates, and amount of beef produced per acre	Jack Archer *Olds*	Steve Archibald *Olds*	760	report pending
Effect of Liming Grey Wooded Soil • to evaluate the use of liming to increase hay/silage yields	Bruce Beattie *Sundre*	Steve Archibald *Olds*	1,848	report pending
Soil Cement as Bunker Silo Floor and Feedlot Pad • to demonstrate the economic and technical feasibility of using soil cement	Lawrence Trenholm *Olds*	Steve Archibald *Olds* Rich Smith *Airdrie*	2,542	report pending
Data Processing Hardware and Software • to evaluate on-farm computers for use by producers with limited data processing experience	James Watt *Cremona*	Lorne Owen *Airdrie*	2,940	report pending
Annual Forages as Grazing Alternatives • to evaluate forage rape, winter wheat, Italian ryegrass and kale for fall grazing	Everett Bennett *Airdrie*	Donald Milligan *Airdrie*	1,934	1,877
Use of Various Products for Preservation of Hay • to assess the effectiveness and costs of using ammonia, sulfur dioxide and a commercial preservative	Bill McFarquhar *Cremona*	Donald Milligan *Airdrie*	1,000	completed
Hay Crop Comparisons • to compare the performance of various hay mixtures	Pockar's Ranches *Sundre*	Steve Archibald *Olds*	1,370	report pending
Vegetative Reclamation of Saline Seeps • to evaluate the use of alfalfa in recharge areas and salt-tolerant grass in discharge areas	Ben Fecho *Hanna*	Lee Melvill *Hanna* John Timmermans *Airdrie*	3,350	report pending
Fertilizers for Winter Wheat Production • to compare broadcast and liquid fertilizers applied in the spring	Stan McNeill *Empress*	John Ruschkowski *Oyen*	575	report pending
Snow and Erosion Control Barrier • to assess the effects of barriers in reducing erosion and enhancing soil moisture on summerfallow	William Powell *Youngstown*	John Ruschkowski *Oyen*	1,500	report pending
Winter Wheat Production as a Means of Reducing Summerfallow • to demonstrate economical cropping alternatives to summerfallow	Brent Clampitt *Oyen*	John Ruschkowski *Oyen* Colin McKenzie *Brooks*	1,095	completed
Winter Wheat Production as a Means of Reducing Summerfallow • to demonstrate economical cropping alternatives to summerfallow	Norman Storch *Hanna*	Russel Horvey *Hanna* Colin McKenzie *Brooks*	1,095	completed

Project Title and Objective	Principal Co-operator/ Project Location	Project Co-ordinator/ Office	Funding 1984-86	Awarded 1986-87
Winter Wheat Production as a Means of Reducing Summerfallow • to demonstrate economical cropping alternatives to summerfallow	Tom Osadczuk *Iddesleigh*	Brian Palichuk *Brooks* Colin McKenzie *Brooks*	1,095	completed
Long-Term Toadflax Control on Summerfallow Fields • to demonstrate various control methods	Richard Bruntjen *Wimborne*	Jack Hazelwood *Three Hills*	3,000	report pending
Rotational Savory Cell Grazing • to evaluate Savory Grazing and to demonstrate use of high tensile fencing	Donald Peterson Betty Peterson *Sundre*	Steve Archibald *Olds* Donald Milligan *Airdrie*	3,025	report pending
Companion Crop Comparisons for Establishing a Forage Stand • to compare canola and barley as companion crops	Ian Harvie *Olds*	Steve Archibald *Olds*	1,500	completed
Self Feeders vs Floor Feeders in Hog Barns • to compare efficiencies of two types of feeder systems in a commercial farrow finish operation	Joe Jeffray *Airdrie*	Rich Smith *Airdrie*	2,650	report pending
Use of Hovers in Farrowing Crates to Reduce Preweaning Piglet Mortality • to assess zone heating in the farrowing area for reducing mortality	Burt Jorgenson *New Brigden*	John Ruschkowski *Oyen*	3,700	report pending
Chaff Ammoniation • to develop cost-effective, practical methods for ammoniating chaff	Ron Walton *Hanna*	Russel Horvey *Hanna*	1,030	report pending
Comparison of the Economics of Dryland Crop Farming and Intensive Grazing and Silage • to compare rye for silage and for grazing	Henry Cuthbertson *Hanna*	Art Edwards *Strathmore*		5,835 completed
Weed and Shrub Control on Native Pasture • to test methods of weed and shrub control to improve production on native pasture	Cecil Longson *High River*	Allen Toly *High River*		4,230
Winter Wheat Grazing Trial • to evaluate the economics and stocking rates for spring seeded winter wheat	Richard Hogan *Oyen*	Donald Milligan *Airdrie* John Ruschkowski *Oyen*		2,650 completed
Maximizing Returns Through Feeder Cattle Using Rotational Native, Tame and Annual Pastures • to determine yields and carrying capacities of various grass mixtures and to compare high tensile to conventional fencing	Betty Larsen Clifford Larsen *Standard*	John Portail *Strathmore*		1,809
Comparison of Barley Varieties • to compare eight barley varieties as to yields, drought tolerance, lodging, and days to maturity	Ken Sackett *Crossfield*	Dave Zukerman *Calgary*		809 completed
Methods of Treating Straw with Aqueous Ammonia • to test injectors for ability to spread ammonia throughout straw bales and to determine nutrient value of treated bales	Dan McKinnon *Airdrie*	Donald Milligan *Airdrie*		910
Annual Forage to Provide Late Season Grazing • to evaluate Italian ryegrass for grazing	Ted Harty *Longview*	Donald Milligan *Airdrie* Allen Toly *High River*		1,450 completed
Implementation of New Techniques Aimed at Improving Pregnancy Rates in Dairy and Beef Cows • to assess techniques to accurately detect low-grade infections	Norman Damkar *Calgary*	Ray Fenton Barbara Archibald *Airdrie*		3,918
Maximizing Reproductive Performance in Dairy Cows Using Feed and Tissue Analysis to Improve Nutritional Management • to identify nutritional problems causing poor reproductive performance in dairy herds	Mark Pollock *Calgary*	Donald Milligan Barbara Archibald *Airdrie*		5,000
Economic Comparison of Spring Wheat Production and Grazed Annual Forages • to compare spring wheat production with grazing of an oat/barley/winter wheat mixture	Gerry Fowlie *Bindloss*	Lee Melvill *Hanna*		2,133 completed
Application of Embryo Transfer Technology in Alberta Dairy Herds • to demonstrate the use of embryo transfer to enhance the productivity and genetic base of dairy herds	Don Chalack *Innisfail*	Steve Archibald *Olds*		9,276
Extension of Grazing Season Through the Use of Annual Forages • to assess annual forages for increasing the quality of pasture	Bill Noy *Rosebud*	Donald Milligan *Airdrie* John Portail *Strathmore*		3,027 completed
Cost-Effectiveness of Perennial Forages for Saline Soil Reclamation • to demonstrate the use of perennial forages to control and reclaim saline soils	Richard Stensland *Hanna*	Ron Koots *Drumheller*		4,272
Salt Tolerances of Forages • to evaluate salt tolerances of and livestock preferences for ryegrass, alfalfa, tall wheat grass, slender wheat grass and canary grass	Peter Steer *Blackie*	Allen Toly *High River*		1,476

Project Title and Objective	Principal Co-operator/ Project Location	Project Co-ordinator/ Office	Funding 1984-86	Awarded 1986-87
Ammoniation of Uncovered Chaff • to evaluate the effectiveness of ammoniating uncovered chaff stacks	Hans Mundt *Cereal*	John Ruschkowski *Oyen*		1,155
Energy Free Thermal Livestock Waterer • to demonstrate a waterer insulated to prevent freezing of winter water sources	Harley Earl *High River*	Allen Toly *High River* Rich Smith *Airdrie*		295
Chemical Screening Trial on Pasture Sage • to demonstrate the effectiveness of various herbicides for pasture sage control	Leonard Wright *Irricana* Bruce Sommerville *Three Hills*	Barbara Archibald *Airdrie*		1,270
Pasture Rejuvenation and Forage Variety Trial • to demonstrate soil preparation, seeding methods and establishment of recommended forage species using banded fertilization	Ray Nicoll *Calgary*	Barbara Archibald *Airdrie*		1,616
Winter Wheat Production to Reduce Summerfallow • to demonstrate economically attractive cropping alternatives to summerfallow	Walter Olson *Iddesleigh*	Brian Palichuk *Brooks* Larry Welsh *Airdrie*		1,300
Evaluation of Pasture Sage Control • to demonstrate the effectiveness of various herbicides in controlling pasture sage	Chinook Applied Research Association *Oyen*	John Ruschkowski *Oyen*		565
Grazing Annual Forages as Part of a Regrassing Program • to evaluate the differences in productivity and regrowth of winter wheat and fall rye and to assess grazing as part of a regrassing program	Dan Chostner *Craigmyle*	Russel Horvey *Hanna* Donald Milligan *Airdrie*		4,590
Evaluation of Linear Measurements for the Selection of Replacement Heifers • to compare the use of a set of measurements, such as girth, rump length, and body length, with the traditional method of visual appraisal	Dallas Jensen *Standard*	John Portail *Strathmore* Donald Milligan *Airdrie*		2,190
Reclamation of Solonetzic Soil by Gypsum Application • to compare the differences between irrigated and dryland solonetzic soil using various application rules for gypsum, calcium nitrate and phosphate	Valebourne Farm *Standard*	Art Edwards *Strathmore* Larry Welsh *Airdrie*		1,303
Annual Legumes for Fallow Replacement • to demonstrate the effect on dark brown soil quality of growing annual legumes as an alternative to summerfallow	Vince Machacek *Crossfield*	Barbara Archibald Larry Welsh *Airdrie*		2,518
Annual Legumes as an Alternative to Fallow • to demonstrate the effect on dark brown soil quality of growing annual legumes as an alternative to summmerfallow	Jay Davis *Acme*	Jack Hazelwood *Three Hills* Larry Welsh *Airdrie*		3,063
Remote Control Bale Weight Adjustment • to develop an attachment for a hay baler that permits adjustment of bale weights from the tractor cab	John Reid *Cremona*	Steve Archibald *Olds* Rich Smith *Airdrie*		2,444
Forage Variety Grazing Trial • to test a number of forages and illustrate proper cultural practices, and to demonstrate a rotational grazing system	Doug Lehman *Oyen*	John Ruschkowski *Oyen* Donald Milligan *Airdrie*		6,831
Perennial Forages Under Irrigation, Annuals Under Irrigation and Dryland • to study grazing systems under irrigation and dryland conditions in terms of weight gain and economics	Kevin Larson *Standard*	Donald Milligan *Airdrie* John Portail *Strathmore*		5,474
Region III - North Central Alberta				
Pasture Improvement Demonstration • to demonstrate the use of forage management, adapted species, and rotational grazing	Geoff Hoar David Hoar *Innisfail*	Ted Darling *Innisfail*	3,715	completed
Beef Pasture Demonstration Project • to compare costs and benefits of a high production grazing system with those of grain production	Larry Steeves *Meeting Creek*	Dale ZoBell *Red Deer*	5,526	completed
Effect of Synovex, Ralgro and Bovaid on Suckling Calves • to compare growth implant performance and to determine implant interaction with insecticide ear tags	Dave Carlyle *Bentley*	Dwight Karren *Lethbridge*	1,278	completed
Evaluation of Implant Programs and Bovaid on Calves to Yearlings • to compare implant programs in terms of castration date, reaction to stress, and interaction with insecticide ear tags	Stan Marcinek Ron Marcinek *Condor*	Dwight Karren *Lethbridge*	1,843	completed

Project Title and Objective	Principal Co-operator/ Project Location	Project Co-ordinator/ Office	Funding 1984-86	Awarded 1986-87
Portable Lambing Facility • to develop a portable structure to improve care of lambs and ewes	Ian Clark Deb Clark *Bentley*	Stuart Tucker *Lacombe*	399	completed
Soil Project — Deep Ripping • to determine effects on crop production of deep ripping heavy clay soils	K. Gongaware *Delburne*	Peter Funk *Red Deer*	900	report pending
Mosquito and Fly Control on Range Cattle • to demonstrate continuous treatment of livestock with registered pesticides	Bill Hunt *Endiang*	Glen Werner *Stettler*	5,810	completed
Daysland Wheat and Barley Varietal Trials • to assess local wheat and barley yields, and lodging, shattering and disease characteristics	Tom Zwack Ed Zwack *Daysland*	Bruce Friedel *Sedgewick*	1,670	completed
Banding vs Conventional Fertilizer Placement — Fall • to compare fall banding with conventional treatments on sandy, rolling land	Morley Blanch *Gwynne*	Hector Goudreau Pat Ramsey *Wetaskiwin*	975	report pending
Banding vs Conventional Fertilizer Placement — Spring • to compare spring banding with conventional treatments on wet soils	Hector Dansereau *Millet*	Hector Goudreau Pat Ramsey *Wetaskiwin*	975	report pending
Banding vs Conventional Fertilizer Placement — Spring • to compare spring banding with conventional treatments on deep topsoil	Lorne Fuhrhop *Wetaskiwin*	Hector Goudreau Pat Ramsey *Wetaskiwin*	975	report pending
Banding vs Conventional Fertilizer Placement — Spring • to compare spring banding with conventional treatments on alluvial and aeolian soils	Donald Kelly *Wetaskiwin*	Hector Goudreau Pat Ramsey *Wetaskiwin*	975	report pending
Banding vs Conventional Fertilizer Placement — Spring • to compare spring banding with conventional treatments on degraded black soils	Heinz Kummer *Wetaskiwin*	Hector Goudreau Pat Ramsey *Wetaskiwin*	975	report pending
Banding vs Conventional Fertilizer Placement — Fall • to compare fall banding with conventional treatments on grey wooded soils	Danny Cameron Reid Cameron *Millet*	Hector Goudreau Pat Ramsey *Wetaskiwin*	975	report pending
Banding vs Conventional Fertilizer Placement — Fall • to compare fall banding with conventional treatments on sandy soils	Arne Carlson *Gwynne*	Hector Goudreau Pat Ramsey *Wetaskiwin*	975	report pending
Banding vs Conventional Fertilizer Placement — Fall • to compare fall banding with conventional treatments on sandy soils	George Jones *Wetaskiwin*	Hector Goudreau Pat Ramsey *Wetaskiwin*	975	report pending
Banding vs Conventional Fertilizer Placement — Fall • to compare fall banding with conventional treatments on gently rolling land	Stevan Lindholm *New Norway*	Hector Goudreau Pat Ramsey *Wetaskiwin*	975	report pending
Banding vs Conventional Fertilizer Placement — Spring • to compare spring banding with conventional treatments on heavy black soils	Doug Reimchen *Wetaskiwin*	Hector Goudreau Pat Ramsey *Wetaskiwin*	975	report pending
Corn Silage Production for Dairy Cows in the Camrose Area • to determine costs and benefits and to compare corn silage with traditional silages	Ivo Weder *Camrose*	Dale ZoBell *Red Deer*	1,156	completed
Round Bale Hay Silage (Continuous Plastic Bags) • to evaluate the Bag-O-Matic system in terms of weather protection, storage losses and feed quality	Dean Doll *Innisfail*	Ted Darling *Innisfail*	1,310	completed
Crop Yield Management • to assess an on-combine grain weigh scale	Craig Shaw *Lacombe*	Neil Miller *Lacombe*	600	report pending
Preservation of High Moisture Grain with Sulfur Dioxide • to evaluate use of sulfur dioxide as a preservative	Warren Elofson Robin Elofson *Ponoka*	Brian Cameron *Ponoka*	3,285	completed
Ammoniation of Alfalfa-Grass Hay • to demonstrate high moisture hay preservation through ammoniation and to assess nutritional quality of treated hay	Merlin Stewart *Stettler*	Andy Birch *Stettler*	600	completed
Value of Temperature Monitoring and Control for Grain Storage • to evaluate the performance and cost of computerized temperature monitoring in natural air drying	David Crompton *Tees*	Robert Borg *Red Deer*	9,220	report pending
Agronomic and Nutritional Comparison of Fall Seeded vs Spring Seeded Cereals for Silage • to compare winter hardiness, weed control, yield, quality and production cost for winter wheat, fall rye and spring seeded barley	Gordon McFadden *Bluffton*	Ted Ford *Rimbey*	382	report pending
Cow-Calf Rotational Grazing Pasture • to demonstrate rotational grazing to increase carrying capacity on unimproved pasture and extend grazing season	Darryl Skaret *Armena*	David Samm *Camrose*	5,070	1,060

Project Title and Objective	Principal Co-operator/ Project Location	Project Co-ordinator/ Office	Funding 1984-86	Awarded 1986-87
Cereal Variety Testing • to compare yields and days to maturity for wheat, oat, and barley varieties on dark brown soils	Robert Kampen *Lougheed*	Bruce Friedel *Sedgewick*	738	763
Liming Acid Soils • to determine the effects on yields of liming acid soils	Leon Layden Merle Layden *Innisfail*	Ted Darling *Innisfail*	4,000	completed
Ammoniation of Barley Straw Bales • to evaluate ammoniated straw as an alternative to hay	John Petty *Innisfail*	Ted Darling *Innisfail*	465	completed
Improving Feed Grain Yields Through Effective Use of Fertilizer • to determine the effects of fertilizers on barley and oat yields	Steve Garbauski *Wetaskiwin*	Pat Ramsey *Wetaskiwin*	1,620	completed
Evaluation of Fall Pasture with Forage Kale and Fall Rye • to compare cow-calf productivity of different fall pasture systems	Richard Griebel *Castor*	Brad Hansen *Coronation*	1,015	completed
Intensive Management of Cereals and Oilseeds • to determine the costs and benefits of intensive management	Fred Lutz *Innisfail*	Ted Darling *Innisfail*	1,055	1,115
Pasture Rotational Grazing for Lambs Using Movable Electric Fencing • to demonstrate grazing techniques for growing and finishing lambs	Chris Harvey *Bluffton*	Ted Ford *Rimbey*	1,400	report pending
Evaluation of Annual Forages Under Intensive Rotational Grazing • to evaluate winter wheat and Italian ryegrass	Bob Grinde *Rimbey*	Ted Ford *Rimbey*	1,940	completed
Pulse Crop Fertility Trial with Fababeans • to determine protein levels, yields, time to maturity, and soil nutrient levels	Rodney Anderson *Kelsey*	David Samm *Camrose*	945	completed
Manure Utilization on Intensively Grazed Pasture Using a Travelling Manure Gun • to evaluate a reel-type gun irrigation system for manure application and to assess the effects of swine manure on pasture	Romney Farms *Eckville*	Brian West *Red Deer*	1,947	3,670
Effect of Bovatec and Rumensin on Feedlot Performance • to compare the effects of feed additives on production costs and steer performance	FEM Farms *Lacombe*	Dale ZoBell *Red Deer*	7,970	completed
Ammoniation of Straw and Evaluation of Feed Value Increase of Barley vs Wheat Straw • to evaluate the use of anhydrous ammonia to increase the feed value of straw	Robert Reimer *Wetaskiwin*	Pat Ramsey *Wetaskiwin*	1,676	completed
Response of Feedlot Steers to Double Dose Ralgro Implants • to determine the effects of growth implants	Murray Stauffer *Eckville*	Dale ZoBell *Red Deer*	1,840	completed
Addition of a Protein Liquid Supplement to Straw Bales as a Roughage Source for Beef Cows • to demonstrate the effects on cow performance of a 32% protein liquid supplement	John Hermann *Caroline*	Dale ZoBell *Red Deer*	1,188	completed
Ammoniation of Tough Oat Greenfeed Bales • to investigate the feasibility of baling high moisture greenfeed and to determine the feed value of treated bales	John Reid *Rocky Mountain House*	Dale ZoBell *Red Deer*	1,215	completed
Reducing Summerfallow by Growing Winter Wheat • to determine the benefits of winter wheat cultivation and to assess the field performance of a new seed drill	Robert Diprose *Botha*	Wayne Jackson *Red Deer*	985	completed
Reducing Summerfallow by Growing Winter Wheat • to determine the benefits of winter wheat cultivation and to assess the field performance of a new seed drill	Byron Muddle *Kirriemuir*	Wayne Jackson *Red Deer*	985	1,600
Whey/Screening Silage as a Feedstuff for Backgrounding Heifers • to evaluate a mixture of whey, chaff and grass screenings for cattle rations	Ian Stewart *Bittern Lake*	Dale ZoBell *Red Deer*		1,596 completed
Comparison of Sow Performance Under Computer Programmed Feeding vs Stall Feeding • to compare computerized and conventional feeding systems	Bacon Acres *Bentley*	Neil Miller *Lacombe*	5,500	report pending
Special Crop Demonstration Trial • to demonstrate special crops including sunflowers, field peas, lentils, flax and canary seed	Chinook Applied Research Association *Coronation*	Doug Cornell *Coronation*	7,222	report pending
Dual Cropping: Field Peas and Canola • to evaluate dual cropping and to compare canola performance under dual and single cropping systems	David Goldstrom *Innisfail*	Ted Darling *Innisfail*	979	report pending
Intensified Barley Management • to determine the costs and benefits of intensive cropping practices	Lorne Turner *Eckville*	Wayne Jackson *Red Deer*	1,608	report pending
Effect of Bovatec and Rumensin on Feedlot Performance of Finishing Heifers • to compare the effects of two feed additives on efficiency and average daily gain	FEM Farms *Lacombe*	Dale ZoBell *Red Deer*		10,328 completed
Use of Ivomec to Control Internal Parasites in Yearling Steers on Pasture • to assess the effects of a new drug to control gastroenteritis	Larry Steeves *Meeting Creek*	Dale ZoBell *Red Deer*		7,494
Annual Forages for Fall Pasture • to demonstrate fall pasture crops (kale, forage rape and fall rye) on grey wooded soil	Waldy Krause *Bluffton*	Ted Ford *Rimbey*		3,937

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Control of Insect Pests on Lactating Dairy Cows • to evaluate the effectiveness of Ciovap in controlling flies, mosquitoes, lice and warbles	B.C.J. Gruttenink *Rimbey*	John VanderLeest *Red Deer* Ted Ford *Rimbey*		490
Benefits of No-Till Cereal Production on Light Soil in the Pine Lake Area • to evaluate soil conservation and erosion control under zero tillage	Cliff Wood *Lousana* Larry Andrews *Innisfail*	Ted Darling *Innisfail*		2,250
Forestburg Cereal Variety Trial • to compare yields of different wheat and barley varieties	Pro Seed Farms *Forestburg*	Bruce Friedel *Sedgewick*		530
Canola Fertility and Seeding Rates • to show the effects of seeding rates and fertilizers on yields	Robert Olsen *Camrose*	David Samm *Camrose*		989
Effects of Liquid Hog Manure on Crop Yields • to demonstrate the use of liquid hog manure as fertilizer for grains	Don Gregorwich *Kelsey*	David Samm *Camrose*		440 completed
Earth Tempered Air Inlet • to demonstrate a ventilation system for livestock barns which uses an underground inlet pipe to reduce air temperature fluctuations	Eugene Brown *Clive*	Robert Borg *Red Deer*		3,000
Trace Mineral Levels of Selected Central Alberta Pastures • to evaluate selected pastures for trace minerals needed in livestock production	Grey Wooded Forage Association *Rocky Mountain House*	Dale ZoBell *Red Deer*		4,040
Cereal Varietal Trial - Thin Black Soil • to test wheat and barley varieties on black loam soils	Hutterian Brethren of Erskine *Erskine*	Glen Werner *Stettler*		750
Cereal Varietal Trial - Solonetzic Soil • to test wheat and barley varieties on solonetzic soils	Hutterian Brethren of Donalda *Donalda*	Robert Dunn *Stettler*		764
Forage Varietal Trial: Saline Reclamation • to show response of grasses and legumes on saline soils	Chardon Farms *Stettler*	Glen Werner *Stettler*		802
Forage Varietal Trial • to test grass and legume varieties on solonetzic soils	Allan MacArthur *Botha*	Robert Dunn *Stettler*		1,365
Wet Feeding Whey vs Dry Feeding • to compare wet feeding hog rations using a mixture of grain and whey with feeding dry rations	Ken Karpowich Marg Karpowich *Millet*	Pat Ramsey *Wetaskiwin*		2,040
Comparison of Precision Fertilizer Placement vs Random Banding on Semi-Dwarf Wheat and Barley • to compare the effects of precision fertilizer placement with random banding	Wayne Cressey *Red Deer*	Wayne Jackson *Red Deer*		5,000
Response of Samson Barley to Various Levels of Fertilizer • to determine the effects on yields and lodging of high rates of fertilizer application	Randall Nichols *Red Deer*	Peter Funk *Red Deer*		2,000
Intensified Barley Management for Maximum Profit • to determine techniques to achieve maximum profit for dwarf barley under intensive crop management	Tom Hagerman *Sylvan Lake*	Peter Funk *Red Deer*		2,199
Response to Banding into Peat Moss Hayland using Nitrogen and Copper • to determine production response of reed canary grass to nitrogen and copper	Bruce Hagerman *Millarville*	Peter Funk *Red Deer*		1,634
Banding vs Broadcast on Pasture and Hayland with Various Rates of Fertilizer • to test the advantages of knifing in fertilizer to improve soil aeration with minimal disturbance	Robert Bickley *Red Deer*	Peter Funk *Red Deer*		3,211
Field Pea and Fababean Demonstration • to compare the agronomics of field pea and fababean varieties and to evaluate field peas in hog rations	Ken Kusk *Kelsey*	David Samm *Camrose*		1,498
Feasibility of Moist Hay in Large Bales • to compare the quality and yield of hay baled at different moisture levels and to assess a hay preservative	Central Alberta Holstein Club *Lacombe*	Myron Bjorge *Lacombe*		3,850
Establishment of Productive Hay and Pasture Mixes on Peat Soils • to evaluate the effects of fertilizers and of grass species adapted to peat soils on pasture productivity	Grey Wooded Forage Association *Rocky Mountain House*	Ted Ford *Red Deer*		8,193
Wild Oat Control Under Reduced Tillage • to evaluate economic returns of various wild oat herbicides	Glenn Christian *Innisfail*	Ted Darling *Innisfail*		885
Use of Soil Cement in a Horizontal Pit Silo • to test the use of soil cement in a pit silo floor	Vern Loughlean *Innisfail*	Ted Darling *Innisfail*		2,285
Alfalfa Variety Demonstration • to demonstrate four varieties of alfalfa	Daryl Blume *Castor*	Doug Cornell *Coronation*		687
Feed Grain Varietal Trial • to demonstrate feed grain varieties	Gordon Klaus *Castor*	Doug Cornell *Coronation*		625

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Killam Pea Plowdown Trial • to assess the effects of added organic matter on tilth, soil moisture, wind erosion control and quack grass control	Herman Freadrich *Forestburg*	Bruce Friedel *Sedgewick*		1,000
Comparison of Corn Silage, Cereal Silage and Sorghum-Sudangrass Hay on Dryland • to compare quality and yields to evaluate sorghum-sudangrass for hay production	John Hughes *Ponoka*	Brian Cameron *Ponoka*		1,043
Portable Low-Cost Solar Heat Source to Supplement Natural Air Grain Drying System • to demonstrate the use of intermittent low level solar heat to power drying fans	Alfred Erichsen *Botha*	Glen Werner *Stettler*		800
Field Pea and Soymeal Feeding Trial Comparison • to compare growth rates between growing hogs fed soymeal or peas as protein sources	Western Hog Growers Association *Kelsey*	David Samm *Camrose*		6,763
Effect of Various Levels of Triticale on the Performance of Feedlot Heifers • to assess the performance of feedlot heifers fed different amounts of triticale	FEM Farms *Lacombe*	Dale ZoBell *Red Deer*		12,330
Region IV - Northeast Alberta				
Evaluation of Cultural Practices to Extend Growing Season, Increase Production and Improve Quality of Vegetables • to assess practices for increasing fruit and vegetable production and quality	Robert Grey Bernice Grey *Fort McMurray*	Harvey Yoder *Lac La Biche*	1,671	completed
Zero (Minimum) Tillage Demonstration • to study the feasibility of zero and minimum tillage	Poplar Glen Farms *Wainwright*	Rick Klippenstein *Wainwright*	7,918	5,151
Application of Passive Solar Collectors to Slant Wall Farm Shops • to create an inexpensive temperature control method for farm shops	Kirk Harrold *Lamont*	Emile de Milliano *Lamont*	200	completed
Comparisons of Various Varieties of Cereal Grains for Silage • to compare costs and benefits of different varieties and to determine the effect of cutting stage on nutrient yield	Ernest Livingstone Doug Livingstone *Vermilion*	George Rock *Camrose*	7,360	completed
Beef Cow-Calf Rotational Grazing Demonstration • to demonstrate rotational grazing using new varieties, chemical fertilizers, and appropriate management techniques	Gordon Ceretzke *Andrew*	Tennis Marx *Ryley*	3,990	completed
Comparison of Aspen Regrowth Control Methods • to demonstrate control through aerial spraying of herbicides at various stages of plant growth	Neil Cory *Grand Centre*	Ronald Hockridge *Bonnyville*	7,500	completed
Pasture Rejuvenation and Renovation for Northeastern Alberta • to demonstrate six methods of rejuvenation and renovation	Douglas Millar *St. Paul*	Kirsty Piquette *St. Paul*	6,160	completed
Rotational Grazing Project • to demonstrate rotational grazing using fertilizers and new grass varieties	Vaughn Hanson *Viking*	Ty Faechner *Ryley*	3,650	2,524 completed
Peas as an Alternate Forage Crop • to demonstrate the use of peas to obtain higher protein forage and improved soil fertility	Gordon Graves Dwayne Kalinsky *Iron River*	Ronald Hockridge *Bonnyville*	8,880	report pending
Seeding Techniques for Altai and Russian Wild Rye • to demonstrate the use of wild rye for spring and fall grazing	Henry Rosing *Innisfree*	Jim Unterschultz *Vegreville*	2,900	report pending
Intensive Beef Cow-Calf Grazing • to demonstrate short-term intensive grazing, to assess electric fencing and to determine the feasibility of extending grazing season	Del Huchulak *Warspite*	Grant Gillund *Smoky Lake*	5,000	completed
Alternative Methods of Nitrogen Application on Hayland • to evaluate the effectiveness and costs of three application methods	Charles Magneson Terry Magneson *Ryley*	Ty Faechner *Ryley*	3,055	completed
Rotational Grazing for Dairy Cows • to evaluate forage production, milk yields and costs	Grant Clarke *Vilna*	Grant Gillund *Smoky Lake*	4,100	report pending
Liming and Deep Ripping • to demonstrate liming to decrease soil acidity and increase forage production, and deep ripping to improve soil structure	Daryl Charlton *Czar*	Agnes Whiting *Provost*	3,225	completed
Feasibility of Deep Subsoiling Using Deep Tillage Equipment • to determine the feasibility of deep tilling grey wooded soil to improve tilth and subsurface water movement	Peter Keryluk *Two Hills*	Shane Dobson *Two Hills*	1,060	completed
Drill Row Spacing Seeding Demonstration • to determine the effects of smaller seed row spacing on weed control and lodging of canola and wheat	Eric Sikora *Warspite*	Don Christensen *Smoky Lake*	3,575	850 completed
Canola Meal as an Alternative Protein Supplement in Swine Rations • to demonstrate the use of canola meal as a partial substitute for soy meal	Dale Malin *Willingdon*	Ron Bazylo *Vermilion*	2,144	completed
Canola Meal as an Alternative Protein Supplement in Swine Rations • to demonstrate the use of canola meal as a partial substitute for soy meal	Martin Wiedemeyer *Derwent*	Ron Bazylo *Vermilion*	1,649	completed

Project Title and Objective	Principal Co-operator/ Project Location	Project Co-ordinator/ Office	Funding 1984-86	Awarded 1986-87
Canola Meal as an Alternative Protein Supplement in Swine Rations • to demonstrate the use of canola meal as a partial substitute for soy meal	Dana Giebelhaus *Vegreville*	Ron Bazylo *Vermilion*	1,649	completed
Fababean Green Manure Trial • to evaluate the economic and agronomic benefits of fababean cultivation	Harold Tangen *Edgerton*	Rick Klippenstein *Wainwright*	1,949	940
Intensive Grazing Using Traditional Pasture Species • to assess the use of recommended species in intensive grazing	Rick Iversen Darlene Iversen *Goodridge*	Kirsty Piquette *St. Paul*	5,700	completed
Effects of Different Rates of Phosphorus, Potassium and Sulfur on Alfalfa Seed Production • to determine the effects of fertilizer applications on a Peace alfalfa stand	Ron Zellweger *St. Paul*	Kirsty Piquette *St. Paul*	1,850	completed
Growing Winter Wheat in Standing Stubble • to demonstrate the effects on soil moisture of seeding into stubble	Kendall Freed *Vegreville*	Jim Unterschultz *Vegreville*	2,635	completed
Short Duration Grazing on Native Aspen Forest Range and Improved Range • to compare livestock production from native and improved range	Neil Cory *Grand Centre*	Ronald Hockridge *Bonnyville*	3,800	report pending
Ripping and Liming of Grey Wooded Soils • to evaluate and demonstrate crop response to three soil treatments	Leon Schaub *Plamondon*	Harvey Yoder *Lac La Biche*	2,650	1,658
Reconstitution of Barley with Whey • to assess reconstitution of barley with inexpensive whey	Poplar Glen Farms *Wainwright*	Rick Klippenstein *Wainwright*	4,629	completed
Evaluation of Spring Seeded Oats, Winter Wheat and Fall Rye • to determine productivity, nutritive value and economics for grazing	Donmar Ranch Ltd. *St. Lina*	Harvey Yoder *Lac La Biche*		3,460 completed
Fall Rye Annual Pasture for Cow-Calf Grazing • to demonstrate native range supplemented with fall rye	Art Leighton *Wainwright*	Rick Klippenstein *Wainwright*		4,490
Hay Drying • to evaluate ventilating and drying hay at higher than usual moisture contents	Ray Murphy *Bonnyville*	Ronald Hockridge *Bonnyville*		6,875
Economics of Plowdown in a Cattle Operation • to analyze the effects of various legumes applied as green manure on soil	John Mayer *Chipman*	David Wong *Lamont*		2,504
Feasibility of Using Scout Barley in Starter Rations for Pigs • to assess the performance of pigs fed mixed diets using a hull-less barley variety	Don Van Iderstine *Smoky Lake*	Ron Bazylo *Vermilion*		525 completed
Cow-Calf Production on Intensively Managed Pasture • to demonstrate the benefits of intensive pasture management	Brad George *Marwayne*	Bjorn Berg Josie Van Lent *Vermilion*		6,800
Soil Improvement Using Field Peas • to evaluate the effects of field peas on soil nitrogen and soil condition	Charles Leskiw *St. Paul*	Don Christensen *Smoky Lake*		2,470
Chemical Summerfallow vs Conventional Tillage • to assess chemical summerfallow in reducing costs associated with crop residue	Johnson Seed Production Ltd. *Wainwright*	Rick Klippenstein *Wainwright*		600
Comparison of Drop vs Self Feeders • to demonstrate the use of a self feeder in cattle production	Stewart's Cattle Co. *Vermilion*	Ron Bazylo *Vermilion*		480 completed
Crossfencing with Electric Fencing • to assess the cost of constructing and maintaining electric crossfencing as compared to the cost of conventional crossfencing	Lakeland Forage Association *Lac La Biche*	Harvey Yoder *Lac La Biche* Larry Wasylik *Vermilion*		3,920
Evaluating the Economic Productivity of a Rotational Grazing Scheme on Solonetzic Soils • to assess the economics of rotational grazing schemes on solonetzic soils	Richard Mandryk *Lamont*	Emile de Milliano *Lamont*		2,000
Brush Control Using Fire and Controlled Grazing • to demonstrate the costs and benefits of brush control with using a combination of controlled grazing and fire	7-D Ranch Ltd. *Innisfree*	Bjorn Berg *Vermilion*		6,042
Region V - Northwest Alberta				
Dairy Pasture Management and Fertility • to demonstrate rotational grazing with recommended pasture species and agronomic practices	Ernie Siemens *Rochester*	Gary Berger *Athabasca*	4,100	completed
Maximizing Returns Through Beef Cattle Utilizing Annual Pastures and Rotational Grazing • to evaluate the costs and benefits of rotational grazing on annual pastures	Ray Olesky *Sangudo*	Lloyd Giebelhaus *Sangudo*	5,925	completed
Development and Evaluation of Grazing Management Strategies on Rotationally and Intensively Grazed Pastures • to evaluate grazing management techniques in terms of cattle weight gain per acre	Pembina Forage Association *Westlock*	Ken Lopetinsky *Barrhead* Rick Bjorge *Westlock*	266	report pending
Round Bale Silage: An Alternative to Hay • to compare round bale silage to red clover hay, to examine storage methods and to test different balers	Ray Fausak *Evansburg*	Fred Young *Evansburg*	2,980	completed

Project Title and Objective	Principal Co-operator/ Project Location	Project Co-ordinator/ Office	Funding 1984-86	Awarded 1986-87
Value of Spayed Heifers Under Feedlot Conditions • to determine the costs and benefits of spaying heifers	George Lawton *Niton Junction*	Rob Hand *Barrhead*	1,260	completed
Subsurface Drainage Using Weeping Tile • to demonstrate the use of tile to reduce wet areas in arable fields	Sid Jeffery *Barrhead*	Allen Macaulay *Barrhead*	7,050	report pending
Evaluation of Nitrogen Application Levels on Grey Wooded Soils • to demonstrate the effects of application level on common grain crops	Earl Lawson *Drayton Valley*	Doug Walkey *Red Deer*	500	completed
Renovating Forage Stands on Peat Soils • to evaluate methods for reestablishing stands	Charles Goupil *Athabasca*	Gary Berger *Athabasca*	7,170	completed
Intensive Cereal Management Techniques Applied to Barley Production in Parkland Alberta • to combine three techniques of intensive cereal management and assess their effects on yield, economic returns, lodging and disease	Ken Nelson *Westlock*	Rick Bjorge *Westlock*	11,860	completed
Economics of Fertilizer Application on Pasture • to demonstrate the effects of nitrogen on pasture carrying capacity and to demonstrate new fencing techniques	Charles Nichol *Barrhead*	Allen Macaulay *Barrhead*	2,849	completed
Fertility Levels on Corn Silage • to determine the effects of fertilizer on yields of two corn varieties	Paul Bryant *Leduc*	Janette McDonald Adam *Leduc*	888	completed
Artificial Heat Synchronization for Controlled Beef Cattle Breeding • to assess artificial heat synchronization in terms of costs, calving interval, labor requirements, and bull capability	Ron Herrmann Ilke Herrmann *Newbrook*	Robert Drysdale *Thorhild*	1,815	completed
Feeding Liquid Whey to Lactating Dairy Cows • to measure milk production, forage consumption, body weight changes and manure production in dairy cattle fed liquid whey	John Allam *Ardrossan*	Dave Ward *Fort Saskatchewan*	4,025	completed
Integrated Broad Spectrum Control of Livestock-Related Insect Pests • to determine the effectiveness of a contact and systemic compound in controlling pests	Stephen Shwetz *Waskatenau*	John VanderLeest *Red Deer*	950	completed
PCW Agra-Tech Seed Treatment • to determine the effects on yield and emergence of impregnating seed barley with water	Roger Prefontaine *Legal*	John Hladky *Morinville*	1,300	completed
Clover Plowdown Evaluation • to test the effects of various clover plowdown dates and incorporation methods on soil nitrogen and tilth	Wes Kirk *Abee*	Robert Drysdale *Thorhild*	1,091	report pending
Effect of Phosphate Placement on Barley and Wheat • to assess the effects on barley and wheat yields of different phosphate placements	Bryan Radke *Barrhead*	Jim Soldan *Barrhead*	2,107	completed
Use of Spot-On to Control Horn Flies • to assess the effectiveness of a commercial insecticide	Ross Moon *Cherhill*	Rob Hand *Barrhead*	570	completed
Quack Grass Control • to compare chemical and cultural methods and to assess a quack grass root picker	Stan Wiskel *Athabasca*	Gary Berger *Athabasca*	585	completed
Soil Amendments Using Industrial Ash • to demonstrate the use of bottom ash to reduce acidity and add micronutrients	Ken Thiessen *Tomahawk*	Doug Walkey *Red Deer*	3,265	completed
Production of Cereal and Forb Selections for Drying to Supply Floral Trade • to demonstrate production, harvesting, coloring and packaging of dried plant materials	William Hutchison *Whitecourt*	Grant Gillund *Smoky Lake*	1,500	report pending
Cultivation of *Pleurotus ostreatus* (Mushrooms) in Woodlot and Greenhouse Rotations • to develop a 70-day greenhouse system for increased production of mushrooms	William Hutchison *Whitecourt*	Tom Krahn *Brooks* Lloyd Giebelhaus *Sangudo*	1,500	report pending
Installation of Foggers to Control Dust and Fungus Spores in Total Confinement Turkey Barns • to assess the effects of controlled humidity and reduced airborne spores on turkey mortality and weight gain	John Chalifoux *Thorhild*	Wayne Winchell *Barrhead*	888	completed
Agronomics of Fababeans and Field Peas in North Central Alberta • to assess costs and benefits of various agronomic practices for pulse crops	Northern Branch, Pulse Growers Association of Alberta *Morinville*	Ken Lopetinsky *Barrhead*	11,035	5,964 completed
Renovation of Peat Soil • to evaluate convenience, cost, and effects on yield and tilth of mixing peat with mineral soils	Marvin Marks *Westlock*	Rod Carlyon *Westlock*	3,235	completed
Rotational Grazing Using Low Cost Electric Fencing for Dairy Cattle • to assess the effects of rotational grazing on milk production	Eileen Dotzler *Fort Assiniboine*	Allan Macaulay *Barrhead*	2,122	report pending
Agronomics of Alfalfa Production • to demonstrate the effects of phosphorus and potassium on yields, and the effects of clipping on winter survival	Five Lakes Farms Ltd. *Mayerthorpe*	Lloyd Giebelhaus *Sangudo*	4,506	report pending

Project Title and Objective	Principal Co-operator/ Project Location	Project Co-ordinator/ Office	Funding 1984-86	Awarded 1986-87
Pasture Rejuvenation • to compare various methods of pasture rejuvenation	West Central Forage Association *Evansburg*	Fred Young *Evansburg*	2,721	report pending
Fertilizer Placement Evaluation — Barley • to determine the effects of placement and application rate	Ralph Geinger Frank Geinger *Mayerthorpe*	Bill Chapman *Barrhead*	1,109	1,799
Fertilizer Placement Evaluation — Canola • to determine the effects of placement and application rate	Ray Courchesne *Fort Saskatchewan*	John Hladky *Morinville*	1,121	report pending
Production Data from Fall Calving of Beef Cows • to measure spring weaning weights, fall yearling weights, feed inputs and other production data	Louis Baudin *Edson*	Dan Peters *Edson*	967	report pending
Canola Meal as an Alternative Protein Supplement for Use in Swine Rations • to demonstrate the use of canola meal as a partial substitute for soy meal	Arnold Nanninga *Barrhead*	Marvin Salomons *Barrhead*	2,767	completed
Canola Meal as an Alternative Protein Supplement for Use in Swine Rations • to demonstrate the use of canola meal as a partial substitute for soy meal	Dave Baker *Neerlandia*	Marvin Salomons *Barrhead*	2,047	completed
Use of Dry Fermentation Aids in Baled Hay • to compare harvesting of dry hay, untreated wet hay, and hay treated with Siloguard	Allan Hughes *Buck Creek*	Gerald Laarhuis *Drayton Valley*	1,510	1,580
Comparison of Hay Preservatives on Round Alfalfa Bales • to compare hay treated with preservatives and untreated hay	Stan Sissons *Clyde*	Ken Lopetinsky *Barrhead*	2,777	completed
Plowing vs Cultivating vs Discing • to compare yield, weed population, disease incidence and soil moisture content	Greg Kyle *Morinville*	John Hladky *Morinville*	845	980
Hay Savor Trials • to test the effectiveness of Hay Savor for treating high moisture hay	John Kozubski *Warburg*	Janette McDonald Adam *Leduc*	998	completed
Alternative Perimeter Fence Designs • to compare construction costs, ease of construction, and durability of four types of fencing	Pembina Forage Association *Westlock*	Bob Buchanan *Barrhead*	1,448	completed
Demonstration of Weigh Wagon for Agronomic Data Collection • to obtain yield data for plot comparisons	Northern Branch, Pulse Growers Association of Alberta *Morinville*	Ken Lopetinsky *Barrhead*	10,500	completed
Intensive Management of Spring Wheat for High Yields • to compare intensive cereal management techniques with conventional practices	Bruce Fuhr *Spruce Grove*	Patrick Hawkings *Stony Plain*	1,596	report pending
Crop Response to Nitrogen on Peat Soil • to evaluate the effects of five levels of nitrogen fertilizer on peat soils	C.J. Carnegie *Barrhead*	Rick Bjorge *Westlock*		6,158
Response of Samson Barley to Fertilizer • to evaluate the effects of fertilizer treatments on semi-dwarf barley	Cliff Cyre *Barrhead*	Rod Carlyon *Westlock*		2,318
Evaluation of Deep Plowing to Restructure Peat Soils • to evaluate the potential of deep plowing peat soils to improve productivity	Northwest Peat Soils Group *Vega*	Bill Chapman *Barrhead*		2,744
ICM Yield Limiting Factors of Harrington Barley • to evaluate disease and lodging characteristics under intensive crop management	Ken Nelson *Westlock*	Rick Bjorge *Westlock*		3,308
Wheat Variety Evaluation for Domestic Feed Market in Alberta • to evaluate economics of commercial wheat varieties	Harvey Visscher *Gibbons*	Bill Chapman *Barrhead*		1,852
Agronomics of Deep Ripping and Mechanical Fracturing of Solonetzic Soil • to determine the agronomic benefits of mechanically fracturing the subsoil	Alex Allan Johann Rennenkampff *Rivière Qui Barre*	John Hladky *Morinville*		2,950
Circular Livestock Handling Facility Demonstration • to demonstrate a circular corral system for easier livestock handling	Pembina Forage Association *Westlock*	Wayne Winchell *Barrhead*		1,400 completed
Riverview Cow-Calf Rotational Grazing Project • to demonstrate rotational grazing, a watering system and high tensile smooth wire fencing	Russell Bardak *Duffield*	Patrick Hawkings *Stony Plain*		5,015
Evaluation of a Cow-Side Milk Progesterone Test Kit • to assess Calfcheck, a test for detection of pregnancy and estrus, in terms of ease of use and effectiveness	Northern Alberta Holstein Association *Rolly View*	Bill Slack *Barrhead*		2,934
Effect of Dehorning or Castrating Feedlot Calves • to determine when dehorning and castrating of feedlot calves are most effective	Northwest Cattle Feeders *Stony Plain*	Rob Hand *Barrhead*		3,300
Effectiveness of Fertilization on Newly Established Alfalfa • to demonstrate the effectiveness of phosphorus, potassium, and sulfur fertilizers on the yield and winter survivability of alfalfa	Kelly Olson *Athabasca*	Curtis Weeks *Athabasca*		2,240
Queen Production Using Alberta Honey Bee Colonies Overwintered in South Central B.C. • to assess the use of overwintered hives for early queen replacement and colony increases	Donald Chapman *Sherwood Park*	Doug Colter *Falher*		5,810

Project Title and Objective	Principal Co-operator/ Project Location	Project Co-ordinator/ Office	Funding 1984-86	Awarded 1986-87
Spray and Burn Technique Applied to Improve Pasture on Grey Wooded Soil • to evaluate the cost and effectiveness of using herbicides followed by burning to control aspen	Ken Porter *Duffield*	Patrick Hawkings *Stony Plain*		8,000
Region VI - Peace River				
Zero Tillage vs Minimum Tillage vs Conventional Tillage Trial • to investigate the costs and benefits of different tillage procedures	Mike Gach *Nampa*	Brian Sawatzky *Peace River*	1,750	completed
Comparative Fertilizer Trials • to compare the effects on yield of deep banding urea, anhydrous application and broadcast application	Robin Hopkins *Peace River*	Brian Sawatzky *Peace River*	1,468	completed
Echo Ranch Pasture Project • to demonstrate the use of rotational grazing and fertilizers in optimizing pasture productivity	Dewey Stickney *Manning*	Elaine Ryl *Manning*	27,291	report pending
Reclamation Study • to increase soil productivity by improving soil acidity, structure and tilth, and by reducing salinity	Harry Rowney *Sexsmith*	Miles Kuryvial *Grande Prairie* Garry Coy *Fairview*	1,460	completed
Queen Rearing and Overwintering • to promote honeybee stock self-sufficiency by overwintering, queen rearing, and using Alberta bees	Jerry Awram *Hines Creek*	Nora Paulovich *Fairview*	9,395	completed
Effect of Shelter Size on Alfalfa Pollination with Leafcutter Bees • to determine the maximum acreage which can be pollinated by a single shelter	Robert Gartly *Eaglesham*	Peter van Everdink *Eaglesham*	6,000	completed
Irrigation in the Lower Peace River Region • to demonstrate the effect of irrigation on wheat, barley, canola and alfalfa	Al Toews *Fort Vermilion*	Arvid Aasen *Fort Vermilion*	12,500	report pending
Intensive Grain Management • to assess the use of plant growth regulators with post-emergent fertilizer	Hans Vander Pol *Tangent*	Peter van Everdink *Eaglesham*	2,500	completed
Chemical-Cultural Control of Canada Thistle and Perennial Sow Thistle • to evaluate the combined use of herbicides and cultural practices for thistle control	Mike Sanocki *Eaglesham*	Peter van Everdink *Eaglesham*	10,210	report pending
Indoor Wintering of Five Frame Nucleus Hives • to demonstrate indoor wintering of honeybees and to promote the introduction of Alberta bee stock	Jules Guerin *Watino*	Doug Colter *Eaglesham*	4,324	completed
Fertility Practice Effects on Yield and Quality of Legumes plus Cereals and Oilseeds in Rotation • to determine yields under optimum fertility conditions of wheat, barley, oats and canola, in rotation with alsike clover and alfalfa	Bob Carsience *Valleyview*	Darryl Wells *Valleyview*	3,213	report pending
Overwintering Alberta Bee Nucleus Hives in British Columbia • to overwinter queens in Vancouver, as an alternative to purchasing packaged bees each season	David Tegart *Fairview, Vancouver*	Nora Paulovich *Fairview*	2,500	completed
Deep Banding Anhydrous Ammonia with a Field Cultivator During Spring Tillage • to determine the effects on moisture conservation and organic matter breakdown	Joe Kramer Linda Kramer *Fairview*	Nora Paulovich *Fairview*	1,433	report pending
Nitrogen Application Methods • to determine the effects of application rate and method on crop performance	Peter Polukoshko *Hines Creek*	Garry Coy *Fairview*	3,264	report pending
Economics of Irrigated Forage Production in the Peace River Region • to compare costs and yields of irrigated and non-irrigated hay	Edward Pimm *Grimshaw*	Dave Spencer *Peace River*	375	880 completed
Cereal, Legume and Grass Seed Crop Residue Salvage: Harvesting and Feeding • to evaluate storage and collection methods for crop residue and to determine nutritional value of the residue	Peter Lundgard *Hines Creek*	Nora Paulovich *Fairview*	7,214	5,425
Subsoiling With Amendments • to demonstrate the benefits of subsoiling with calcium amendments	Grant Gaschnitz *High Prairie*	Garry Coy *Fairview*	1,630	completed
Canola Seedbed Preparation and Seeding • to determine the effects on yield of variations in seedbed preparation and sowing	Henry Dechant *Fairview*	Mike Rudakewich *Fairview*	700	report pending
Deep Tillage Comparison • to compare the effectiveness of para-plows and subsoilers for increasing water infiltration into soil	Raymond Arcand *Donnelly*	Garry Coy *Fairview*	640	report pending
Patch Sprayer for Combine • to test an on-combine system for spraying perennial weeds	Daniel Limoges *Girouxville*	Marvin Nakonechny *Falher*	750	report pending
Windrow Root and Rock Picker • to modify existing rock picking equipment to also pick up roots	Paul-Henri Valiquette *McLennan*	Marvin Nakonechny *Falher*	5,000	report pending

Project Title and Objective	Principal Co-operator/ Project Location	Project Co-ordinator/ Office	Funding 1984-86	Awarded 1986-87
Soil Conservation and Rehabilitation Through Minimum Tillage in a Continuous Cropping System • to evaluate minimum tillage using a recent seed drill model	Ron Molson *Bonanza*	Garry Coy *Fairview*	11,350	report pending
Geotextiles for Dugout Weed Control • to assess the use of geotextiles for nonchemical weed control in dugouts	Tom Stegmeier *Rycroft*	Bill Cornwell *Fairview*	1,360	report pending
Tri-Crop Seeding • to identify legumes for optimum performance in tri-crop seedings with barley and winter wheat	Lloyd Ross *Cleardale*	Nora Paulovich *Fairview*	2,973	report pending
Intensive Rotational Grazing • to demonstrate intensive pasture management	Ed Connolley *Berwyn*	Brian Sawatzky *Peace River*		3,140
Home Built Cattle Squeeze • to build, use and evaluate an economical device for restraining cattle	Roland Caillieu *Valleyview*	Darryl Wells *Valleyview*		400
Forage Stand Rejuvenation by Sod-Seeding Legumes vs Fertilizer Application • to compare sod-seeding, total workdown and fertilizer application for forage rejuvenation	Gordon Herr *Valleyview*	Darryl Wells *Valleyview*		997
Forage Stand Rejuvenation by Sod-Seeding Legumes • to compare the agronomics and economics of sod-seeding with total workdown	Tony Yelenik *Valleyview*	Darryl Wells *Valleyview*		978
Application of Various Rates of Nitrogen Fertilizer • to evaluate the cost effectiveness of nitrogen fertilizer on tame pasture	Whitemud Grazing Association *Grimshaw*	Elaine Ryl *Manning*		1,600 completed
Evaluation of Options for High Yields in Barley • to demonstrate intensive management to maximize yields and profit	Don Wieben *Fairview*	Mike Rudakewich *Fairview*		5,162
Alternative Types of Perimeter Fencing • to compare cost and viability of various types of fencing on rough terrain in isolated areas	Loretta Epp *Sexsmith*	Bill Smith *Grande Prairie*		2,000
Winter Wheat Production in the Lower Peace River Region • to evaluate the viability and economics of growing winter wheat	Bill Fedeyko *High Level*	Arvid Aasen *Fort Vermilion*		5,520
Electric High Tensile Fencing for Feedlots • to demonstrate the use of electric high tensile wire fencing	Lawrence Skaley *Rycroft*	Roger Andreiuk *Spirit River*		500
Humane Cattle Squeeze • to develop and test a cattle squeeze with parallel sides rather than V-shaped sides to prevent injury to cattle	Allan Isaac *Spirit River*	Trevor Jones *Fairview*		800
Subsoiling with Amendments • to assess the effects of deep ripping, and of lime and gypsum applications on heavy clay soils	Robert Girard *Girouxville*	Marvin Nakonechny *Falher*		1,189

To the Members of the Farming
for the Future Council

I have examined the balance sheet of the Agricultural Research Council of Alberta Farming for the Future Program as at March 31, 1987 and the statement of revenue, expenditure and unexpended funds for the year then ended. My examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as I considered necessary in the circumstances.

In my opinion, these financial statements present fairly the financial position of the Program as at March 31, 1987 and the results of its operations and the changes in its financial position for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Donald D. Salmon
C.A.
Auditor General

Edmonton, Alberta
August 28, 1987

Agricultural Research Council of Alberta
Farming For The Future Program

Balance Sheet
As at March 31, 1987

	1987	1986
ASSETS		
Current:		
Deposits in trust (Note 3)	**$ 276,099**	$ 461,774
Due from the Alberta Heritage Savings Trust Fund	**332,630**	188,310
	$ 608,729	$ 650,084
LIABILITIES AND UNEXPENDED FUNDS		
Current:		
Accounts payable	**$ 601,302**	$ 341,184
Unexpended funds	**7,427**	308,900
	$ 608,729	$ 650,084

The accompanying notes are part of these financial statements.

Statement of Revenue, Expenditure and Unexpended Funds
For the Year Ended March 31, 1987

	1987	1986
Revenue:		
Contributions from the Province of Alberta:		
Alberta Heritage Savings Trust Fund (Note 4)	**$4,710,912**	$4,730,426
Expenditure:		
Research grants, Schedule 1:		
Universities	**1,148,516**	1,361,988
Other	**1,676,622**	1,143,745
Research expenditure for administered projects, Schedule 2	**1,413,400**	1,593,920
Research grants for projects under the On-Farm Demonstration Program, Schedule 3	**418,191**	342,804
Supplies and services	**198,827**	167,930
Administrative personnel costs	**156,829**	163,925
	5,012,385	4,774,312
Excess of expenditure over revenue	**301,473**	43,886
Unexpended funds at beginning of year	**308,900**	352,786
Unexpended funds at end of year	**$ 7,427**	$ 308,900

NOTES TO THE FINANCIAL STATEMENTS
MARCH 31, 1987

Note 1 — Authority

The Farming for the Future Program operates under the authority of the Department of Agriculture Act, Chapter D-12, Revised Statutes of Alberta 1980, as amended.

Pursuant to the Act, the Program was established by Ministerial Order under the administration of the Agricultural Research Council of Alberta.

Note 2 — Significant Accounting Policies and Reporting Practices

(a) Research Grants

Research grants are recorded in these financial statements when grants have been approved for payment by the Minister of Agriculture and conditions of that approval have been formally accepted by the researchers. Unexpended balances of grant funds held in researchers' accounts are not reflected in these financial statements.

Grant funds which are returned to the Program after the completion of the project are reflected in the financial statements as a reduction of current expenditure.

(b) Changes in Financial Position

A statement of changes in financial position is not provided as disclosure in these financial statements is considered to be adequate.

Note 3 — Deposits in Trust

Deposits in trust consist of deposits held as follows:

	1987	1986
General Trust Account,		
Province of Alberta	$276,099	$152,874
The University of Alberta	–	308,900
	$276,099	$461,774

Note 4 — Contributions from the Province of Alberta

The Appropriation (Alberta Heritage Savings Trust Fund, Capital Projects Division) Act, 1986-87 provided for payments to the Program to a maximum of $5,000,000 for the year ended March 31, 1987 (1986 $5,000,000). This provision which enabled the Program to receive funds up to the stated maximum lapsed at March 31, 1987.

Note 5 — Commitments

As at March 31, 1987 the Program had commitments totalling approximately $3,931,000 (1986 $4,071,000) with respect to grant applications approved by the Council but awaiting approval by the Minister of Agriculture, or where conditions of approval by the Minister have not been formally accepted by researchers.

Note 6 — Administration Costs

Certain salaries and other overhead costs as well as all accommodation costs incurred in the administration of the Program have been borne by the Province of Alberta, General Revenue Fund and are not reflected in these financial statements.

Note 7 — Approval of Financial Statements

These financial statements were approved by management.

Agricultural Research Council of Alberta
Farming For The Future Program

Schedule of Research Grants
For the Year Ended March 31, 1987

Schedule 1

	1987	1986
Universities:		
The University of Alberta	**$1,107,716**	$1,312,393
The University of Manitoba	**35,000**	7,000
The University of Calgary	**5,800**	43,450
The University of Saskatchewan	**–**	(855)
	1,148,516	1,361,988
Other:		
Veterinary Infectious Disease Organization	**216,290**	212,076
Alberta Agricultural Research Trust	**200,000**	–
Western College of Veterinary Medicine	**180,387**	283,874
UMA Engineering Ltd. (formerly Underwood McLellan Ltd.)	**136,335**	128,200
I & S Produce Ltd.	**127,000**	–
Agriculture Canada:		
Saskatchewan	**111,000**	111,500
British Columbia	**60,800**	75,000
Alberta Research Council	**101,799**	141,468
Nanuk Engineering	**99,950**	–
UFL Foods Inc.	**98,000**	–
Alberta Livestock Transplants Ltd.	**85,000**	–
Scicon Research and Development Corporation	**68,536**	–
Baker Engineering Enterprises Ltd.	**44,137**	–
Klein Economic Consulting Ltd.	**32,000**	–
Alberta Soil and Feed Analysis Ltd.	**27,124**	–
Monenco	**21,890**	–
Central Swine Veterinary Service	**21,310**	–
Rogers Engineering Inc.	**20,272**	–
Lakeside Research	**20,000**	37,500
Alberta Alfalfa Seed Producers Association	**10,800**	
Olds College	**9,000**	11,750
P.O.S. Pilot Plant Corp.	**(15,008)**	–
Hardy Associates (1978) Ltd.	**–**	87,600
Thorlakson Feedyards Ltd.	**–**	30,000
Western Cooperative Fertilizers Ltd.	**–**	27,590
Alberta Sugar Company	**–**	(2,813)
	1,676,622	1,143,745
	$2,825,138	$2,505,733

Schedule of Research Expenditure for Administered Projects
For the Year Ended March 31, 1987

Schedule 2

	1987	1986
Agriculture Canada:		
Lethbridge	**$ 605,618**	$ 684,330
Beaverlodge	**367,910**	310,286
Lacombe	**129,204**	242,494
Fort Vermilion	**39,484**	54,945
Saskatoon	**14,843**	14,674
Alberta Department of Agriculture:		
Lethbridge	**122,052**	143,196
Lacombe	**77,022**	73,359
Brooks	**54,638**	61,537
Edmonton	**2,629**	9,099
	$1,413,400	$1,593,920

Schedule of Research Grants for Projects
Under the On-Farm Demonstration Program
For the Year Ended March 31, 1987

Schedule 3

	1987	1986
Region:		
Lethbridge	**$120,623**	$ 64,398
Red Deer	**86,585**	56,552
Airdrie	**85,093**	61,320
Vermilion	**49,152**	37,069
Barrhead	**48,816**	63,987
Fairview	**27,922**	59,478
	$418,191	$342,804

Statistical Tables

Distribution of Research Program Projects and Estimated Funding by Institution *1986-87*

Institution	Number of New Projects	Number of Renewed Projects	Funding Awarded	Percent of Total Awarded
Agriculture Canada	—	20	$1,429,578	31.3
Alberta Agriculture	3	5	325,824	7.1
Alberta Research Council	2	1	104,500	2.3
Olds College	—	1	9,000	0.2
Private Industry	14	1	813,234	17.8
University of Alberta	15	25	1,503,931	32.9
University of Manitoba	1	—	35,000	0.8
University of Saskatchewan	1	3	185,000	4.0
Veterinary Infectious Disease Organization	1	2	166,290	3.6
TOTAL	37	58	$4,572,357	100.0

Distribution of Research Program Projects and Estimated Funding by Program Area *1986-87*

Program Area	Number of New Projects	Number of Renewed Projects	Funding Awarded	Percent of Total Awarded
Cereals and Oilseeds	1	7	$691,500	15.1
Crop Protection and Entomology	2	5	236,645	5.2
Forages	3	5	286,002	6.3
Irrigation	3	1	259,055	5.7
Land Resources and Engineering	4	9	722,593	15.8
Non-Ruminant Livestock	3	4	348,415	7.6
Processing, Transportation, Marketing and Socio-Economics	9	8	651,900	14.3
Ruminant Livestock	10	14	1,062,800	23.2
Special Crops	2	5	313,447	6.8
TOTAL	37	58	$4,572,357	100.0

Distribution of Research Program Projects and Estimated Funding by Institution *1987-88*

Institution	Number of Projects*	Funding Awarded	Percent of Total Awarded
Agriculture Canada	26	$1,495,048	39.2
Alberta Agriculture	6	281,504	7.4
Alberta Research Council	3	97,000	2.6
Private Industry	4	198,050	5.2
University of Alberta	37	1,345,941	35.3
University of British Columbia	1	31,440	0.8
University of Calgary	1	36,200	0.9
University of Lethbridge	1	29,000	0.8
University of Manitoba	1	33,000	0.9
University of Saskatchewan	5	214,000	5.6
Veterinary Infectious Disease Organization	1	50,000	1.3
TOTAL	86	$3,811,183	100.0

*Since 1987-88 is the first year of Farming for the Future's third mandate, all projects are considered new projects.

Distribution of Research Program Projects and Estimated Funding by Program Area

1987-88

Program Area	Number of Projects*	Funding Awarded	Percent of Total Awarded
Cereals and Oilseeds	5	$507,100	13.3
Crop Protection and Entomology	8	298,335	7.8
Forages	8	316,000	8.3
Irrigation	3	160,645	4.2
Land Resources and Engineering	11	529,000	14.0
Non-Ruminant Livestock	7	233,381	6.1
Processing, Transportation, Marketing and Socio-Economics	17	534,500	14.0
Ruminant Livestock	21	903,000	23.7
Special Crops	6	329,222	8.6
TOTAL	86	$3,811,183	100.0

Distribution of Research Program Projects and Estimated Funding by Year

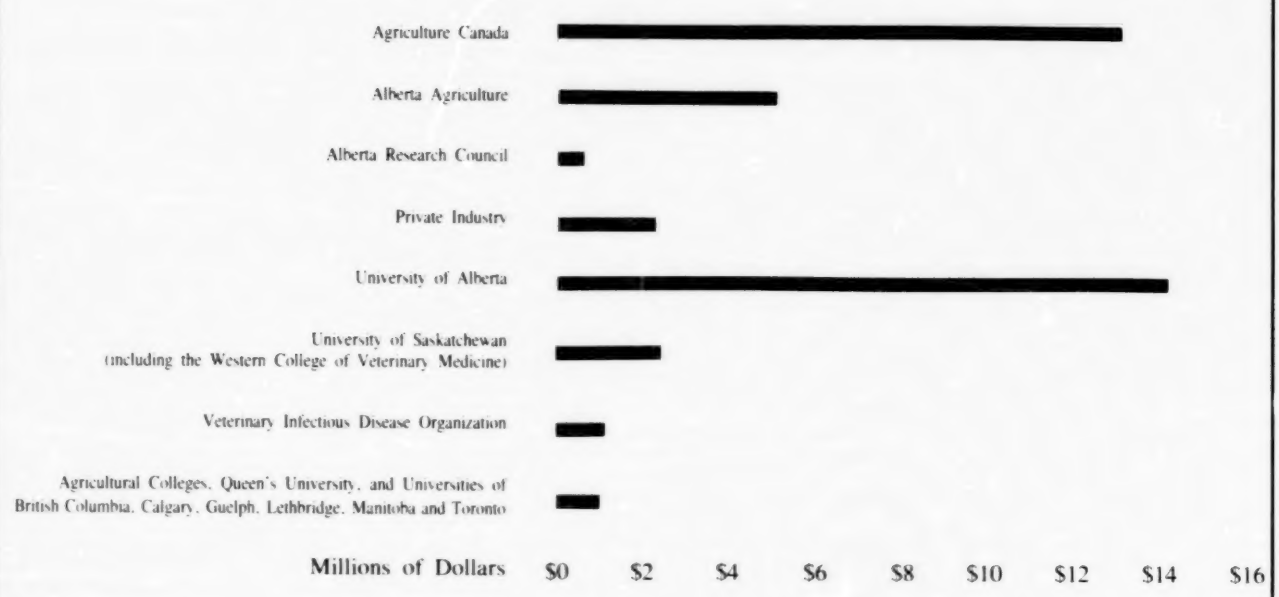
	New Projects		Renewed Projects		Total	
Year	Number	Funding	Number	Funding	Number	Funding
First Mandate						
1979-80	54	$2,133,680		$	54	$2,133,680
1980-81	31	980,465	51	2,210,642	82	3,191,107
1981-82	25	761,915	80	3,281,402	105	4,043,317
1982-83	40	1,594,500	101	4,116,911	141	5,711,411
1983-84	49	2,439,675	93	4,602,785	142	7,042,460
Subtotal	199					$22,121,975
Second Mandate						
1984-85	101	4,343,769			101	4,343,769
1985-86	38	1,513,079	65	3,309,988	103	4,823,067
1986-87	37	1,533,870	58	3,038,487	95	4,572,357
Subtotal	176					$13,739,193
Third Mandate						
1987-88	86	3,811,183			86	$ 3,811,183
GRAND TOTAL	461					$39,672,351

Distribution of On-Farm Demonstration Program Projects and Estimated Funding by Region

	1985-86			*1986-87*		
Region	Number of New Projects	Number of Renewed Projects	Funding Awarded	Number of New Projects	Number of Renewed Projects	Funding Awarded
Region I — Southern Alberta	7	6	$65,481	9	7	$124,240
Region II — South Central Alberta	21	4	60,069	28	4	93,168
Region III — North Central Alberta	23	3	57,800	33	5	103,026
Region IV — Northeast Alberta	10	4	41,079	12	5	51,289
Region V — Northwest Alberta	17	5	65,702	13	4	58,352
Region VI — Peace River	14	7	68,039	11	2	28,591
TOTAL	92	29	$358,170	106	27	$458,666

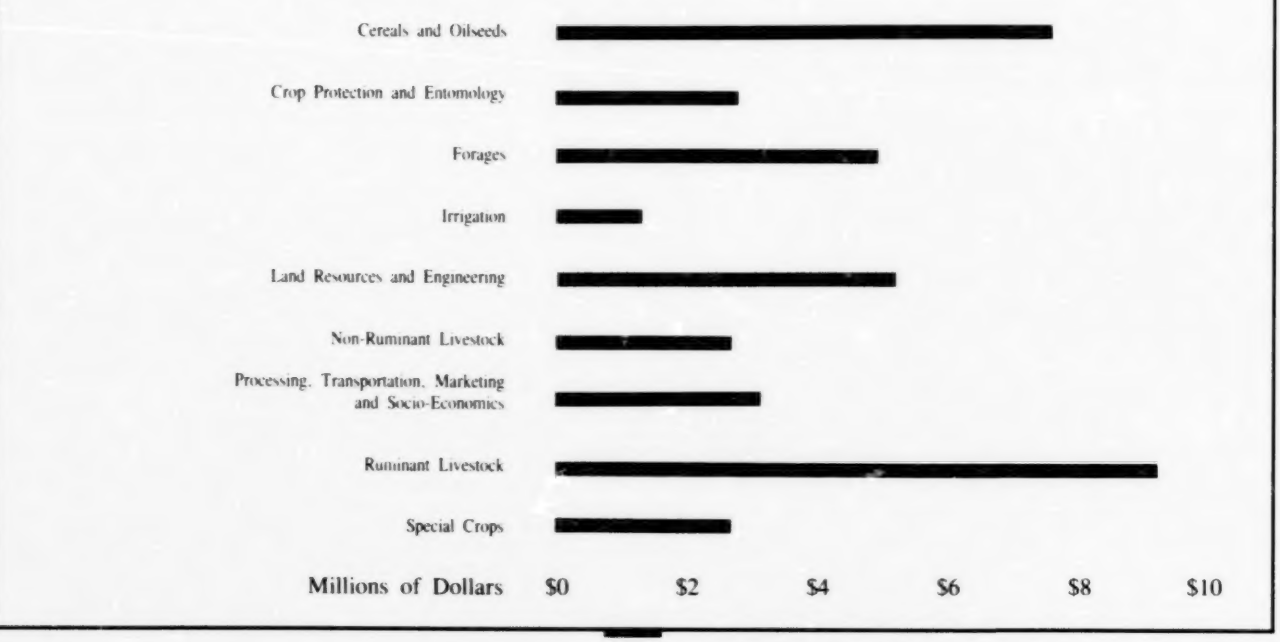
Distribution of Research Program
Estimated Project Funding by Institution

1979-80 to 1987-88



Distribution of Research Program
Estimated Project Funding by Program Area

1979-80 to 1987-88



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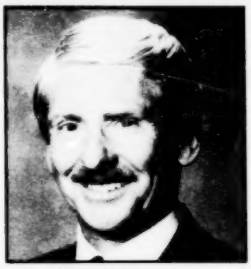

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Cherry Point

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Research Division
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	Dr. K.G. Briggs, *Edmonton* University of Alberta	Mr. D.M. Hueppelsheuser, *Blackfalds* Producer	Dr. V.S. Baron, *Lacombe* Agriculture Canada
	Mr. D. Duff, *Olds* Producer	Mr. J. Jenzen, *Hythe* Producer	Mr. M. Holt, *Sangudo* Producer
	Mr. E. Elm, *Hardisty* Producer	Dr. B.K. Mitchell, *Edmonton* University of Alberta	Mr. A. Kumlin, *Calgary* Producer
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			Mr. N. Storch, *Hanna* Producer
			Mr. M.G. Turnbull, *Edmonton* Alberta Forestry, Lands and Wildlife

Program Area	Irrigation	Land Resources and Engineering	Non-Ruminant Livestock
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	Mr. P.D. Edlund, *Burdett* Producer	Mr. P. Heck, *Manning* Producer	Dr. C. Riddell, *Saskatoon* Western College of Veterinary Medicine
	Mr. L.R. Garner, *Hill Spring* Producer	Dr. C.W. Lindwall, *Lethbridge* Agriculture Canada	Dr. A. Sather, *Lacombe* Agriculture Canada
	Mr. J.W. Thiessen, *Edmonton* Alberta Environment	Mr. A. Pimm, *Grimshaw* Producer	Mr. D. Steckly, *Carstairs* Producer
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Program Area	Processing, Transportation, Marketing and Socio-Economics	Ruminant Livestock	Special Crops
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	Dr. T.S. Veeman, *Edmonton* University of Alberta	Mr. D. Carlson, *Pincher Creek* Producer	Mr. J. Hole, *St. Albert* Producer
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		Dr. J.E. Lawson, *Lethbridge* Agriculture Canada	Dr. P. Nagarajan, *Edmonton* Alberta Research Council
		Dr. J.G. Manns, *Saskatoon* Western College of Veterinary Medicine	Dr. H.H. Muendel, *Lethbridge* Agriculture Canada
		Dr. M.A. Price, *Edmonton* University of Alberta	Mr. R. Sproule, *Sherwood Park* Salisbury Greenhouses

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Mr. R. Cervo, *Lundbreck*
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Region VI. Peace River

Chairman Mr. D.R. Young, *Fairview*

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Mr. A. Bulhofner, *Woking*
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